THE IRON TRADE REVIEW

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BETTER DEMAND

FOR NEARLY ALL FINISHED PRODUCTS,

But Some Low Prices Are Being Made—Southern Pig Iron Situation Improves — Material for Panama Canal.

Although pig iron still lags, and although competition in some finished products is very active, the general aspect of the market this week shows encouraging improvement. In structural material, plates, sheets, tin plate, pipe and steel bars, the demand shows a gratifying increase. The Steel Corporation is now operating about 64 per cent of its blast furnace capacity, and its earnings will justify the usual dividend declarations at the next meeting of the board of directors.

Pig Iron Production

The output of blast furnaces for March amounted to 1,822,024 tons, compared with 1,682,470 tons in the short month of February, when the daily production was 60,051 tons, compared with 58,775 tons in March. Furnaces in blast on the last day of March show a decrease of four, compared with the last day in February, and the outlook is that the number in blast will be still further reduced this month. Some recent transactions in pig iron, both north and south, have been at very low figures, but the southern situation is somewhat improved, and several important interests are declining to take orders at $11 Birmingham for No. 2 for the last half of the year. Sales of southern pig iron during the recent movement are estimated at about 100,000 tons. Stocks in furnace yards of the Mahoning and Shenango valleys are estimated at about 200,000 tons, some of which is under contract.

Canal Proposals

The Isthmian canal commission has asked proposals on a large assortment of iron and steel material. Although the commission reserves the right to either increase or decrease the stipulated quantities of material, it is estimated that the purchase will amount to about $6,000,000. Bids will be received until April 19. Delivery is to be made over the fiscal year ending June 30, 1910.

Structural Material

In structural material, competition in the case of important contracts has brought out some very low bids, almost as low, in fact, as any recently mentioned, but on ordinary tonnages, the 1.30c price Pittsburg is adhered to. The American Bridge Co. has taken orders in the Chicago district for the week amounting to about 16,000 tons. This company will furnish 11,000 tons for bridges for the Florida East Coast. Milliken Bros. will furnish 4,000 tons of Bethlehem shapes for the Whitney Central Bank, New Orleans. The lowest bidder for the Denison-Harvard bridge at Cleveland was the McClintic-Marshall Construction Co., at $49.60 per ton erected, on the 6,300 tons required, and this company will probably obtain the contract, although labor unions are bringing pressure to bear on the county commissioners to award the work to the King Bridge Co., Cleveland, which bid $49.90.

Railroad Buying

The Pressed Steel Car Co. will furnish 134 box and gondola cars for the Long Island railroad; 51 steel baggage cars have been ordered for the New York Central; the Missouri, Kansas & Texas is in the market for 750 freight cars, and it is expected that the B. & O. inquiry for a large number of cars will soon appear in definite form.

RADICAL CHANGES

NOT EXPECTED IN THE METAL SCHEDULE,

But Duty Will Probably be Placed on Ore—May Change Scrap Clause—Drawback Controversy.

Washington, D. C., April 6.—All indications point to a general tightening up of the rates of the tariff bill, rather than a relaxation of those rates. That is the tendency and the metal schedules will go with the general order of things. After having announced an increase in the rates on charcoal iron, the ways and means committee give intimations that no other changes are proposed in the metal rates pending the final vote on the bill in the house on Friday. This suggestion must be taken with a grain of allowance. It is impossible to tell what changes may be found necessary at the last moment. In fact, the chances are favorable for modifications in the paragraph relating to scrap iron, either by way of an increase in the rate, or such change in the wording as to prevent the importation of broken pig as scrap.

Inside advices here to members of the ways and means committee warrant the statement that the iron and steel men, the great corporation as well as the independents, are pretty well satisfied with the metal rates of the Payne bill. A few changes are desired, and some of them will be made, but it is regarded as certain that only the minor changes will be obtained, while those which relate to advance in the steel rate will not be favorably considered, either by the house or by the senate committee on finance.

The Finance Committee.

If the house shall make no material changes in the metal rates, the whole question will go up to the finance committee on Friday. The indications are that the latter committee will go over the subject in detail from iron ore through to the most highly finished products. The iron ore rate may be

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THE WEEK IN IRON CENTERS

PITTSBURG.

Gratifying Increase in Orders for Bars and Other Finished Products.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., April 6.

The lapse of practically the first month upon a reasonably defined price basis is now permitting an accurate comparative summary to be drawn from iron and steel conditions under the open market, and the result is evidence of genuine improvement. Although the abandonment of official prices dates from Feb. 19, it was not until several weeks later that the market had overcome the disturbance arising from the decisive action taken or had settled to a state of rational negotiations betwen buyers and sellers. Current reports of extremely low prices being made in some lines are still promoting some doubt and uncertainty, but the buying public has apparently fully discounted these at their true value.

In several of the finished lines of iron and steel, the month of March was the heaviest, in point of mill orders booked, since the beginning of the depression 18 months ago. This improvement has not been confined to the seasonable products or to particular companies, but has been spread over most of the list of principal rolled material, excepting rails and has been distributed among the several makers. Marked gains in the tonnages of specifications received have been shown in steel bars, tubular goods, sheets, tin plate and structural shapes and plates.

The showing of steel bars has probably been the best. The leading producer, the Carnegie Steel Co., during the first quarter just closed, booked double the tonnage taken in the corresponding quarter of 1908, and much of this business was entered during March. The company is now operating 80 per cent of its bar mill capacity. The record of the other leading steel bar makers is no less favorable, their aggregate rolling orders last month being the heaviest in more than a year. The sheet trade is now moving strongly and in tin plate the height of the active consumptive season is at hand. The increase in building operations in the country is plainly shown in the better running schedules of the structural mills. In pipe, especially line pipe, some companies have made heavy engagements for early shipment.

The great bulk of the orders placed on mill books during the past four or five weeks is for quick delivery, indicating the effect of the reduced prices in stimulating buying for pressing needs and the manufacturers are cultivating this manner of trading at present. Whether the more advantageous buying opportunities will influence a confident contracting against future requirements in the face of pending tariff legislation and other disquieting factors, remains to be proved.

Pig Iron.—It is estimated that at present there are from 200,000 to 250,000 tons of pig iron in furnace yards in the Mahoning and Shenango valleys which is well divided between steel-making and foundry iron. A considerable portion of this tonnage, especially in steel-making iron, is under contract, but is moving sluggishly by reason of limited steel works activities. At the present rate of production, the furnaces are increasing the accumulation.

The market is drifting at a low ebb and the very moderate trading is developing further declines in prices. No particular interest is yet being shown by melters, particularly foundry consumers, in second quarter iron. The inquiry from this territory is light, but there is some business from other sections under negotiation, including 1,000 tons of basic for April delivery for a Canton, O., steel interest, and 2,500 tons of foundry and malleable for an eastern consumer. A mine car interest in this district has taken 500 tons of malleable for early delivery at about $14.50 valley. Foundry iron is now quoted at from $14.25 to $14.50 valley furnace with reports of lower prices being available on attractive orders, basic at $14.25 to $14.50 valley, Bessemer at $15 to $15.25 valley and malleable at $14.50 to $14.75 valley. The Bessemer average for March was $15.44 valley or $16.34 Pittsburg, compared with $15.87 valley and $16.77 Pittsburg in February. The basic average for March was $14.94 valley or $15.84 Pittsburg, compared with $15.18 valley and $16.08 Pittsburg in February.

The past several weeks has seen a considerable buying in southern iron, and it is estimated that fully 100,000 tons have been sold in this movement. The price generally has been $11 Birmingham for No. 2, although $10.50 is reported in some cases. In addition to heavy purchases by the leading cast iron pipe interest, there has been a freer contracting among western implement consumers for medium-sized lots.

On prompt and second quarter delivery on northern iron, we quote as follows:

Bessemer, valley	$15.00 to 15.25
Bessemer, Pittsburg	15.90 to 16.15
No. 2 foundry, Pittsburg	15.15 to 15.40
Gray forge, Pittsburg	14.40 to 14.65
Basic, valley	14.25 to 14.50
Basic, Pittsburg	15.15 to 15.40

Ferro-Alloys.—The market is still quiet and no buying of consequence is being done. Prices in ferro-manganese are steady. Some activity in 50 and 75 ton lots of 11 per cent ferro-silicon, at about the quoted market is noted. We quote 80 per cent ferro-manganese at $42 to $43 Baltimore, with a freight rate of $1.95 to Pittsburg.

Imported 50 per cent ferro-silicon is quoted at $50.50 to $61 Pittsburg on forward deliveries; domestic, 12 per cent, $26; 11 per cent, $25; 10 per cent, $24, Pittsburg.

Plates.—Outside of structural plates this class of material is not moving with especial activity. The market has some favorable prospects, however, from projects now developing in large sized pipe work. Along with shapes, structural plates are being specified quite liberally with the mills. The Pressed Steel Car Co. has been awarded 134 box and gondola cars by the Long Island railroad, and the steel material will be furnished by the Carnegie Steel Co. The New York Central lines have also placed an order for 51 steel baggage express cars, of which 16 will be built by the Standard Steel Car Co., 20 by the American Car & Foundry Co., 10 by the Pullman Car Co. and five by the Barney & Smith Car Co. The Missouri, Kansas & Texas railroad is in the market for about 750 freight cars including 78 flat, 111 gondola and 459 box cars. The large Baltimore & Ohio car project which has been mentioned a number of times is still in indefinite form. Shading of plate prices is only moderate. We quote the present plate market as follows:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.30c f. o. b. mill. Extras are as follows per 100 pounds: Boiler and flange steel plate, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel,

0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10; circles, 0.20c. Plates in widths over 110 inches up to 115 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 9, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—The sheet market is showing considerably more activity and specifications coming to the mills are aggregating a very comfortable tonnage. Bookings over the past few weeks have been fully up to capacity with some companies. The demand is from miscellaneous sources and is largely for prompt shipment. Shading of sheet prices appears less marked, and in black sheets minimum quotations are very well held. The leading interest continues to operate at about 60 per cent of capacity while the independents have about 75 per cent of their mills in action. We quote present minimum prices on sheets as follows:

Blue annealed sheets, Nos. 10 and heavier, 1.60c; Nos. 11 and 12, 1.65c; Nos. 13 and 14, 1.70c; Nos. 15 and 16, 1.80c; box annealed sheets, Nos. 10 to 12, 1.85c; Nos. 13 and 14, 1.90c; Nos. 15 and 16, 1.95c; Nos. 17 to 21, 2c; Nos. 22 to 24, 2.05c; Nos. 25 and 26, 2.10c; No. 27, 2.15c; No. 28, 2.20c; No. 29, 2.25c; No. 30, 2.35c; galvanized sheets, Nos. 13 and 14, 2.30c; Nos. 15 and 16, 2.40c; Nos. 17 to 21, 2.50c; Nos. 22 to 24, 2.65c; Nos. 25 and 26, 2.85c; No. 27, 3.05c; No. 28, 3.25c; No. 29, 3.35c; No. 30, 3.60c; painted roofing sheets, $1.55 per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing sheets, $2.80 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—The tin plate market has recovered from the setback recently received when prices were cut $5 a ton, and specifications have again become quite heavy. The canning interests are ordering very liberally against present contracts and there is some new contracting for extended shipment being done. The market is now in its most active season. The American Sheet & Tin Plate Co. continues to run at a high rate of activity and this week has 198 mills out of a serviceable capacity of 213 in operation, and expects to have working shortly its entire active equipment when its Demmler plant is put on. The operations of the independents are also close to normal. Tin plate prices are very well held. We quote the present market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.45 f. o. b. mill Pittsburg district and $3.40 in large lots. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—No rail developments of importance are announced. The Carnegie Steel Co. is receiving steady specifications against the contracts recently placed by the large railroad systems and other interests, and is booking a run of small orders, none of which exceeds 1,000 tons. During the past week about 2,000 tons of light rails were taken. Prices on light rails show a slight tendency toward hardening. On present specifications on Bessemer rails, we quote as follows, the base price for open-hearth rails being $30 mill:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $32; 12-pound, $28; 16-pound, $26; 20-pound, $25; 25 to 45-pound, $24; angle splice bars for standard sections, 1.50c. Standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—The demand for sheet bars is very good owing to the increased operations of the sheet and tin plate mills, and specifications against contracts in many cases are up to full quotas. Adjustment of running contracts on sheet bars to the new market level has been made, and this has stimulated freer ordering. Consumers of billets and slabs who are not under extended contract are displaying more interest in the market and are apparently more convinced as to the stability of prices. While there have been some low prices in billets made by some interests since the break in the market, these have largely disappeared, and the $23 Pittsburg quotation represents the market.

Bessemer and open-hearth 4 x 4 billets with 0.25 carbon and less are quoted at $23 Pittsburg, with the usual extras for size and analysis, and forging billets at $25 Pittsburg. Sheet and tin bars are $25 Pittsburg. Some steel makers are still willing to divide the freight within the $1 limit, making the price in the immediate Pittsburg territory $23.50 delivered on billets and $25.50 delivered on sheet bars.

Hoops and Bands.—Specifications against hoop contracts are coming to the mills in a fair way, but new buying is not of large proportions. Cotton tie contracting is quite active, but prices are somewhat irregular. We quote present prices as follows:

Hoops in carload lots, 1.60c; in less than carload lots, 1.70c; bands, 1.20c, base half extras as per standard steel.

Merchant Bars.—Orders for steel bars are showing marked gains and in aggregate specifications March proved to be the best month since the depression for the principal producers. The bar mills of the Carnegie Steel Co. are working at 80 per cent of capacity, the steel works of the Republic Iron & Steel Co. are running full and substantial increases are noted by the Jones & Laughlin Steel Co. and the Cambria Steel Co. While a few contracts with the farming implement consumers have been closed, the main bulk of this patronage remains to be taken and this promises to precipitate some sharp competition. Some contracts in bars at present prices have been accepted to the end of the year, but for the general trade the disposition of the makers is to avoid such extended delivery. On current business the 1.20c Pittsburg price is well observed, although in exceptional cases some extreme shading has been done. A sale of 650 tons at full prices is reported. Bar iron in the Pittsburg district is not so strong and is obtainable at 1.35c, but trading is light. Shafting is showing little improvement. We quote present prices as follows:

Common iron bars, 1.35c to 1.40c Pittsburg; Bessemer and open-hearth steel bars, 1.20c; plow and cultivator, 1.20c; channels, angles, zees, tees, under 3-inch, 1.30c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 60 per cent in carloads, and 55 per cent in less than carloads, delivered in base territory. Planished and machine straightened tire steel is 1.40c base; iron finished tire under 1½ by 1½ inches, 1.35c, both plus ½ extra on tire card; iron finished tire, 1½ by ½ and over, 1.20c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch and thicker, we quote base prices for 100 pounds, $3.05 on hard, and $3.30 on soft.

Structural Material.—The new inquiry coming out in structural lines is good and is well distributed among railroad, industrial and commercial undertakings. Prices being quoted on fabrication work continue extremely low, but heavy concessions from the 1.30c Pittsburg price on plain material are not being made. Generally the shading being done on attractive business does not pass the 1.25c mark. The mills are receiving good specifications for

structural shapes and plates. The McClintic-Marshall Construction Co. has submitted the lowest bid on the Denison and Harvard avenue viaduct in Cleveland, which will require 6,300 tons. Milliken Bros. have been awarded the Whitney Central National Bank, New Orleans, 2,500 tons. Bids went in this week on a new office building for the Standard Steel Car Co., at Butler, Pa., which will take about 500 tons. Allegheny county has invited plans for a 10-story annex to its present court house. We quote the present general market as follows:

Beams and channels, 15-inch and under, 1.30c; over 15 inches, 1.40c; zees, 1.30c; tees, 1.35c; angles from 3 to 6 inches, 1.30c; over 6 inches, 1.40c; universal and sheared plates, 6¼ inches and wider, 1.30c base.

Merchant Pipe.—Prospects in tubular goods continue to appear in a large way and some heavy tonnages have been booked. An eastern company has placed a contract for 60 miles of 16-inch line pipe for Kansas delivery. The Southern Pacific railway has come into the market for approximately 200 miles of 8-inch line pipe for California delivery. Spang, Chalfant & Co., Inc., have entered and are now at work upon orders involving from 12,000 to 15,000 tons of heavy gas line pipe of sizes from 16 to 18 inches. The Isthmian Canal Commission will close April 19 on about 2,000,000 feet of iron or steel pipe ranging from ¼ to 12 inches. A western gas company has closed for four miles of 2 and 4-inch line pipe. Merchant pipe is moving in a better volume, as consumptive demands are increasing and jobbers are showing more confidence in taking stocks, although this latter tendency is still restricted. Merchant pipe prices are quite firm. We quote the following official discounts on merchant pipe subject to five off to jobbers, while a few of the very large jobbers with mill connections are given an additional one point off:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	72	56	69	..
⅜ inch	73	59	70	56
½ inch	76	64	73	61
¾ to 6 inch.....	80	70	77	67
7 to 12 inch.....	75	60	72	57
PLUGGED AND REAMED.				
1 to 4 inch.....	78	68	75	65
EXTRA STRONG PLAIN ENDS.				
⅛ to ¾ inch.....	65	53	62	50
½ to 4 inch.....	72	60	59	57
4½ to 8 inch.....	68	56	65	53
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inch.....	61	50	58	47

Boiler Tubes.—Some improvement in the demand for merchant tubes is noted, and the railroads are also buying locomotive tubes more freely. The market, however, is one of moderate activity. Tubing prices are fairly well settled. We quote the following official discounts on lap-welded steel boiler tubes to jobbers in carloads:

1 to 1½ inch	50
1¾ to 2¼ inch	62
2½ inch	64
2¾ to 5 inch	70
6 to 13 inch	62

2½ inch and smaller, over 18 feet, 10 per cent net extra.

2¾ inch and larger, over 22 feet, 10 per cent net extra.

To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

We quote the following discounts on charcoal iron tubes to jobbers:

1 to 1½ inch.....	45
1¾ to 2¼ inch.....	45
2½ inch	50
2¾ to 5 inch	57
6 to 13 inch	45

Wire Products.—The volume of specifications in nails and wire to some of the independent makers has greatly increased, so that prompt deliveries are not readily obtainable. There has been shading on nails and wire ranging from $1 to $2 a ton, and this has attracted considerable business to some independents so that some mill books are in a comfortable shape. A good demand for fencing is current, and prices for this product appear more stable. The official market on wire products is unchanged and continues as follows:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c, and to retailers in carloads, 1.85c.

Wire Rods.—It is not possible to get an accurate line on wire rod prices, as little business is going. The nominal market continues $33 Pittsburg on Bessemer, and $34 Pittsburg on open-hearth rods.

Coke.—Low prices on good grades of coke for prompt delivery continue to be named, as production is running in excess of consumptive needs. The market lacks substance in that there is little support in the way of contracting for extended shipment. There has been some negotiation for furnace coke by western interests for the year's delivery from July to July. Some companies are enjoying a consistent run of business in foundry contracts, showing a steady melt of iron in some sections. We quote spot furnace coke at from $1.50 to $1.75 ovens, and on contract from $1.75 to $1.90 ovens. On first-class Connellsville foundry coke, the range is from $1.80 to $2 ovens for prompt shipment, and on contracts from $2.15 to $2.35 ovens. The *Courier's* figures for the week ending March 27 show 22,558 ovens active, with an output of 237,741 tons, compared with 23,122 active ovens and a production of 251,261 tons the previous week.

Old Material.—The old material market has become more stationary, with the evidence of a disposition on the part of the mills to take offered tonnage a little more freely. At $14 delivered, heavy steel is appearing more attractive to some mills and they are picking up at this basis the lots that are tendered them by dealers. Little yard scrap is coming upon the market and dealers are showing a willingness to await developments before disposing of their tonnage. Generally the market is quiet and largely nominal with respect to prices, although the downward movement is not so apparent. We quote gross tons delivered in the Pittsburg district as follows:

Heavy melting scrap, $14 to $14.25; re-rolling rails, $14.25 to $14.50; bundled sheet scrap, $11.25 to $11.75; iron axles, $18 to $19; old iron rails, $15 to $16; No. 1 wrought scrap, $13.25 to $13.75; old car wheels, $14 to $14.50; low phosphorus, $16 to $16.50; machine shop turnings, $8.50 to $9; cast borings, $7.50 to $8; No. 1 cast scrap, $13.50 to $14; malleable, $13 to $13.50; stove plate, $10.50 to $11.

CHICAGO.

Lowest Prices Recently Made on Finished Lines Do Not Prevail.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, April 6.

Although the market is still dangerously near the edge over which it may slip back to lower prices, there is reason to believe that in several lines customers are not able to buy at the bottom. In pig iron there is a lively inquiry for iron to be delivered in the third quarter and through the remainder of the year, interest centering chiefly in the question of whether $10.50 Birmingham can be obtained. There is no longer much room for doubt that a price equivalent to $10.50 Birmingham for No. 2 iron to be delivered before July 1 has been made by two interests with furnaces adjacent to Milwaukee. The market price, however, is not that low. The scramble in bar iron has reacted somewhat and a good bottom has been established at 1.30c with one interest holding at 1.32½c. Considerable tonnage in steel bars has been placed for the period up to Jan. 1 next, prices ranging from 1.33c to 1.35c. A premium is being asked, it is understood, where the consumers desire to cover beyond that date. Bar specifications are very good. The plate situation is strong with little if any variation from the Pittsburg basing price of $1.27. Sheets

are very active, especially in the lighter weights. The week brought out a good structural tonnage, the placing of orders by the railroads covering their requirements for the balance of the year being a feature. The prices at which this tonnage was placed are reported at the low water mark. Very litt'e developed with regard to rails. The scrap market is somewhat stronger.

Pig Iron.—The market has been disturbed in the past fortnight both by the heavy pressure brought to bear by the melters with a view to bringing out a $10.50 or better price for southern iron and by the keenness of competition at Milwaukee between some of the furnaces near that city. The entrance of the Bay View furnaces of the Steel Corporation into the merchant iron field brought out a price equivalent to $10.50 Birmingham on a considerable tonnage in the territory immediately adjacent. The western market elsewhere fails to reveal any break from the $11 price which prevails for current business. On orders for spot shipment $11.50 is asked and obtained. The large tonnage of southern iron, 50,000 tons, which was bought by the pipe interests was principally No. 3 foundry and was purchased on the basis of $11. There are a number of good inquiries in the market from agricultural implement nt rests, malleable foundries and the larger buyers in the Milwaukee district. Interest is being shown to a large degree in iron for last hal', but where furnaces are quoting at all the price appears to be $11.50. We quote for prompt shipment as follows:

Lake Superior charcoal	$19.50 to 20.00
Northern foundry No. 1	17.00 to 17.50
Northern foundry No. 2	16.50 to 17.00
Northern foundry No. 3	16.00 to 16.50
Southern foundry No. 1	15.85 to 16.35
Southern foundry No. 2	15.35 to 15.85
Southern foundry No. 3	14.85 to 15.35
Southern foundry No. 4	14.35 to 14.85
Southern No. 1 soft	15.85 to 16.35
Southern No. 2 soft	15.35 to 15.85
Southern gray forge	13.85 to 14.35
Southern mottled	13.60 to 14.10
Southern silveries, 4 per cent silicon	17.60 to 18.10
Southern silveries, 5 per cent silicon	18.10 to 18.60
Southern silveries, 6 per cent silicon	18.60 to 19.10
Jackson Co. silveries, 6 per cent.	19.40 to 19.90
Jackson Co. silveries, 8 per cent.	20.40 to 20.90
Jackson Co. silveries, 10 per cent	21.40 to 21.90
Malleable Bessemer	16.50 to 17.00
Standard Bessemer	17.40 to 17.90
Alabama basic	16.85 to 17.35

Merchant Bars.—There is reason to believe that the lowest prices that have been quoted are not prevailing today. It has been shown by an offer of tonnage that less than $1.30 for bar iron will not be done by a number of mills which sell in this territory and a large number of contracts during the past week have been adjusted to that basis. One interest is understood to have raised its price 50 cents a ton above that figure. Better prices than $1.30 are below the prevailing level. The volume of business in iron bars is small. In steel bars, there is some irregularity, with prices varying from $1.38 Chicago down to $1.33. The bulk of the tonnage cannot be bought at less than $1.35. The contract limit at these prices has been extended from July 1 to Jan. 1, 1909, and a considerable tonnage has been taken care of by new contracts and the increasing of old contract tonnages. Current orders for delivery in the next three months are very good, one order for 6,000 tons having been taken by the leading interest. Specifications are in normal volume. One independent interest shows an increase of specifications in March of 4,000 tons over February, and 5,000 tons over January. For hard steel bars and angles, there is considerable variation in the f. o. b. mill price due to the wide territory in which shipments are being made and some low prices are being made at the mill. Delivered prices at Chicago range from $1.25 to $1.30. We quote for Chicago delivery as follows:

Bar iron, 1.30c; soft steel bars and bands, 1.35c half extras; soft steel angles, less than 3 x 3, 1.48c; hoops, 1.78c base, full extras; planished or smooth finished tire steel, 1.58c; iron finish, up to 1½ x ½-inch, 1.53c base tire card; iron finish, 1½ x ½-inch and larger, 1.38c base steel card; channel for solid rubber tire, ¾ to 1 inch, 1.88c and 1⅛-inch and larger, 1.78c; smooth-finished machinery steel, 1.63c; flat sleigh shoe, 1.43c; concave and convex sleight shoe, 1.63c; cutter shoe, 2.75c; toe calk steel, 1.93c; railway spring, 1.73c, base steel card; vehicle spring steel, 1.78c base vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 60 per cent off the list for carload lots, and 55 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.80c to 1.90c, full extras; soft steel bars, 1.60c per 100 pound base, plus half extras; soft steel hoops, 2.10c, full extras.

Plates.—Prices for plates are quite steady. On a desirable tonnage a canvas of the mills locally and in the east and including the leading interest brought out the uniform price of $1.45 Chicago. Specifications, especially for structural and railroad work, have been very good and the situation is firm, particularly from the standpoint of the leading interest. For mill prices, see Pittsburg report. Freight to Chicago, 18 cents. We quote from local stocks as follows:

Tank steel, ¼-inch and heavier, up to 72 inches wide, 1.70 to 1.80c; from 72 inches wide to 96 inches wide, 1.80c to 1.90c; 3/16-inch up to and including 60 inches wide, 1.80c to 1.85c; 72 inches wide, 2.05c to 2.10c; No. 8 up to 60 inches wide, 1.80c to 1.85c. Flange and head quality, 25c extra.

Sheets.—The trade in sheets is well supported, particularly in the lighter gages and galvanized. Prices continue somewhat unsettled and irregular, but generally the market in this department is in favorable condition. For mill prices, see Pittsburg report. Freight to Chicago, 18 cents. We quote store prices at Chicago as follows:

Store prices at Chicago: No. 10, 2c to 2.10c; No. 12, 2.05c to 2.15c; No. 14, 2.10c to 2.20c; No. 16, 2.20c to 2.30c; Nos. 18-20, 2.50c to 2.55c; Nos. 22-24, 2.55c to 2.60c; No. 26, 2.60c to 2.65c; No. 27, 2.65c to 2.70c; No. 28, 2.75c to 2.80c; No. 30, 3.05c; galvanized sheets, Nos. 10 to 16, 3c to 3.10c; Nos. 18 to 20, 3.05c to 3.15c; Nos. 22 to 24, 3.20c to 3.25c; No. 26, 3.40c to 3.45c; No. 27, 3.60c to 3.65c; No. 28, 3.80c to 3.90c; No. 30, 4.20c to 4.50c.

Structural Steel.—Of special note during the week was the contracting by the railroads. The Chicago, Burlington & Quincy, the Chicago & Alton and the Santa Fe contracted for their season's requirements, the bulk of specifications for which are to be entered prior to July 1. It is probable that prices as low as those at which these contracts were placed will not be duplicated again. It is understood that they were all placed with the American Bridge Co., whose tonnage for the week in this office is reported in the neighborhood of 16,000. The Miami Copper Co., located in Arizona, ordered 1,600 tons of steel from the Minneapolis Steel & Machinery Co. The general contract for the First National Bank of Denver, in which there will be 800 tons of steel, was let to Jas. Stewart & Co., of St. Louis. The Modern Structural Steel Co., of Waukesha, is the low bidder on 2,200 tons for the Kerns building at Salt Lake City. The Gray Construction Co. will let the contracts for the steel for two buildings, one requiring 2,000 tons and the other 700 tons. The fabricator of

the steel will be required to take 10 per cent interest in the buildings. The smaller of the two buildings is for the State Bank of Little Rock, Ark. Bids have been submitted on 2,000 tons for a saw mill at Orvisburg, Miss., for The Hines Lumber Co., and 200 tons for the Smart building at Kansas City. The Union Drop Forge Co. will inquire for 800 tons. The letting of the Steger building contract has been postponed for 10 days, and the Northern Trust Co. building is being refigured for reinforced concrete. Prices on all contracts are very low. For mill prices on plain material, see Pittsburg report. Freight to Chicago, 18 cents. We quote for delivery from local jobbers' stocks as follows:

All angles, 3 inches and larger, including 6 inches, $1.70 per 100 pounds; angles over 6 inches, $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.70 per 100 pounds, base; channels, 3 inches and larger, $1.70 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Billets.—Occasional lots of one or two carloads constitute practically all of the market transactions in billets. To make up for the small volume of trading, there is, however, practically no irregularity in prices and $28 Chicago is uniformly obtained for forging billets. We quote as follows: 4 x 4-inch rolling billets, $26; forging billets, $28.

Rails and Track Supplies.—Orders for 5,000 tons and 1,500 tons of standard rails were taken by the leading interest during the week. Specifications for spikes and bolts continue fair. Light rails have fallen off materially and prices are very weak with decided concessions necessary for the taking of such business as is current. For standard sections, see Pittsburg report. We quote as follows:

Light rails, 25-pound to 45-pound, $24; 20-pound, $25; 16-pound, $26; 12-pound, $27. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.15c to 2.20c; with hexagon nuts, 2.30c to 2.40c; small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

Merchant Pipe and Boiler Tubes.—A slight but steady improvement is to be noted in the tonnage of merchant pipe. Boiler tubes, on the other hand, are moving very slowly, particularly to boiler shops. The railroads are buying lightly. Prices are fairly well maintained.

Cast Iron Pipe.—Bids are being opened today on 10,000 tons of pipe for Cheyenne, Wyo. Sales of about 1,000 tons of culvert pipe for railroad purposes are reported and lettings are scheduled at Salem, Ind., for 400 tons and at Silvas, Ill., for 600 tons. The tonnage of small orders accumulated during the week was normal. Prices continue firm despite the apathy in the pig iron market and we continue to quote as follows:

4-inch water pipe, $27.50; 6 to 14-inch, $26.50; larger sizes, $25.50; gas pipe, $1 a ton higher.

Wire Products.—While the price situation in the matter of wire products shows a degree of strength, the trade is somewhat less brisk. The turning of the farmer to the immediate care of his crops decreases the demand for fence wire and nails. We quote as follows:

Wire nails, jobbers' carload lots, $2.13; retailers' carload lots, $2.18; painted barb wire, jobbers' carload lots, $2.28; retailers' carload lots, $2.33, with 30c for galvanizing; plain wire to jobbers in carloads, $1.93, and to retailers in carloads, $2.03. Wire rods, Bessemer, $33; open-hearth, $34; chain rods, $33, f. o. b. Pittsburg.

Old Material.—The inquiry from two or three large consumers has brought increased activity in the scrap market and developed a slightly stronger tone on the more desirable grades. The Great Northern railway sold its entire list at good prices, the 1,500 tons of re-rolling rails which it offered bringing a little better than $13.50 Chicago basis. The bottom of the market is being touched only where it is necessary to sell certain material and such prices are confined to small lots. The Chicago & Northwestern railroad offers this week 4,850 tons, which includes 1,500 tons of re-rolling rails. The Santa Fe has 800 tons to sell and the Wisconsin Central about 600 tons. The Baltimore & Ohio also has a list out. We have revised our prices somewhat and quote gross tons in the first paragraph as follows:

Old car wheels	$14.00 to 14.50
Old iron rails	15.75 to 16.25
Re-rolling rails (4 ft. and over)	13.00 to 13.50
Old steel rails (4 ft. and under)	13.50 to 14.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	12.25 to 12.75
Heavy melting steel	12.50 to 13.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.50 to 12.00
No. 2 R. R. wrought	10.50 to 11.00
Knucklers, couplers and springs	11.25 to 11.75
Shafting	15.25 to 15.75
Iron car axles	16.00 to 16.50
Steel car axles	15.75 to 16.25
Dealers' forge No. 1	9.50 to 10.00
Pipes and flues	8.50 to 9.00
No. 1 cast, 150 lbs. and less	12.25 to 12.75
No. 1 mill	7.00 to 7.50
Mixed busheling (Nos. 1 and 2)	7.00 to 7.50
Country sheet	5.00 to 5.50
No. 1 boiler cut	9.00 to 9.50
Boiler punchings	11.00 to 11.50
Cast borings	7.00 to 7.50
Mixed borings, etc.	7.00 to 7.50
Machine shop turnings	6.50 to 7.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 10.50
Stove plate and light cast scrap	11.00 to 11.50
Old iron splice bars	13.50 to 14.00

CLEVELAND.

Bridge Contract to be Awarded—Union Men Leave Vessels.

Office of THE IRON TRADE REVIEW, Browning Building, April 6.

Iron Ore.—A contract has been made for carrying 500,000 tons of ore from the head of the lakes to Lake Erie ports at 65 cents per ton. The contract is for five years, and 100,000 tons will be shipped each season. No sales of ore are reported, and very little interest is being manifested by furnace operators.

In compliance with the demand of union officials, a considerable number of firemen and engineers have left boats which are being fitted out by the Pittsburg Steamship Co. for sailing. The action of the union in ordering its men from the vessels is a part of the plan to fight the establishment of the open shop principle on lake vessels. The places left vacant by the men who left their vessels have been quickly filled, and vessel interests anticipate no serious difficulty in getting all the men they need to man their boats.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; Old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The market is very dull, and it is understood that on an inquiry for 1,000 tons from a concern at Barberton, O., some very low prices were named. While some interests are asking $14.50, it is believed that little difficulty would be experienced in buying at $14.25 valley for No. 2.

Coke.—With the exception of one contract of from 1,200 to 1,500 tons of foundry coke for the last half of the year, very little business has been transacted. We quote spot furnace coke at $1.50 to $1.65 at the ovens, and on contract $1.65 to $1.75. For first class Connellsville foundry coke, we quote on shipments up to the second half $2 to $2.25.

Finished Materials.—The air is filled with rumors of lower prices on nearly all finished materials. Buyers consider that it is their market, and are telling some very interesting stories of

their experience, many of which are regarded with suspicion by sellers. On the whole, it seems pretty well established that on structural materials, especially, prices are being firmly maintained, and that many of the rumors of cutting on other products have little foundation. Interest has centered on the bids for the Denison-Harvard bridge, which involves about 6,300 tons of structural steel and 300 tons of reinforcing bars. The bids for the structural steel erected were as follows: The McClintic-Marshall Construction Co., $49.60 per ton; King Bridge Co., $49.90; Cowing Engineering Co., $51.80; American Bridge Co., $53; Pennsylvania Steel Co., $55; Interstate Engineering Co., $56.85; Stroebel Steel Construction Co., $62.80. The contract will probably be awarded to the McClintic-Marshall Construction Co., although labor unions are bringing pressure to bear on the county commissioners to make the award to the King Bridge Co. A decision has not yet been reached. The contract for the new Bailey building on Euclid avenue, involving about 1,200 tons, will be awarded this week. Inquiries for reinforcing bars for a number of buildings are pending. Mills which have heretofore made contracts for steel bars up to July 1 only, are now willing to contract up to Jan. 1. Bar iron is dull and prices irregular. The Union rolling mill is in operation this week, but the Empire mill is idle.

Old Material.—With little quantities of material moving either between broker and consumer or even between broker and dealer, it is difficult to learn prices further than nominally. Several railroad lists of fair tonnage are coming out, and if the railroads get as good prices as they have in cases during the past two weeks, they might naturally feel quite satisfied. Some prices have been marked down the past few days and we quote f. o. b., Cleveland, as follows:

Old iron rails	$14.50 to 15.00
Old steel rails (re-rolling)	13.50 to 14.00
Old steel rails (under 6 feet)	13.50 to 14.00
Old car wheels	14.50 to 15.00
Old steel boiler plate	11.00 to 11.50
Malleable iron (railroad)	12.50 to 13.00
Steel axles	17.00 to 17.50
Malleable iron (agricultural)	11.50 to 12.00
Heavy steel	12.00 to 12.50
Country mixed steel	11.00 to 11.50
Low phosphorus	16.00 to 16.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	10.00 to 10.50
No. 1 machine cast	12.50 to 13.00
Iron axles	16.00 to 16.50
Axle turnings	8.50 to 9.00
Machine shop turnings	6.50 to 7.00
Grate bars	10.50 to 11.00
Pipes and flues	10.00 to 10.50
Tank iron	9.00 to 9.50
Hoop and band iron	7.00 to 7.50
Sheet iron	5.50 to 6.00
Wrought drillings	6.50 to 7.00
Stove plate	10.50 to 11.00
Cast borings	6.00 to 6.50

CINCINNATI.

Somewhat Improved Tone, But Low Prices Still Prevail.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., April 6.

(Special Telegram.)

Cincinnati, April 7, 1909.—Several southern furnaces have withdrawn quotations of $11 Birmingham for last half. This price is being made by only two companies. Speculators are commencing to take on $11 iron. Inquiry is better and the market seems to be firmer with indications of withdrawals of the $11 prices for third and fourth quarter.

Pig Iron.—More interest is shown in the market this week than last. Cast iron pipe makers continue to inquire for iron and the leading interest is asking for prices on from 2,000 to 4,000 tons for one of its plants; another eastern pipe maker wants 6,000 tons for May and June delivery divided between No. 3 and gray forge. There were also two large manufacturers in this line calling on sales agencies during the week and there is strong evidence that low grade irons in the south are scarce; with $10 Birmingham freely offered, without bringing out any tonnage to speak of. An Indiana buyer took some southern and northern No. 2 foundry for last half delivery at prices believed to be $11 Birmingham for the southern and $14 Ironton for the northern. A purchase at Springfield, O., of 1,800 tons for last half delivery is reported, divided as follows: 700 tons of No. 2 southern at $11 Birmingham, 500 tons No. 4 southern at $10.25 Birmingham and 600 tons of No. 2 northern at a price equal to $14 Ironton; although the business is said to have gone to a furnace having a lower freight rate than Ironton. There is an inquiry for 1,200 tons from a manufacturer in Wisconsin, and 1,000 tons from an Ohio manufacturer for last half delivery. Scattered sales show more iron selling than last week. There are no sales reported below $11 Birmingham and recent rumors of this price having been shaded are now regarded here as without foundation. The market has weakened to the extent of the opening up of the last half at $11 Birmingham and $14 Ironton, but the inquiry and general feeling give the market a steadier tone and the trade, instead of being in doubt that the bottom has been reached, is assuming a position of increased assurance.

A careful inquiry recently made as to stocks of pig iron on hand in the south makes the total on the yards of Alabama stacks 45,000 tons, and estimating the Tennessee furnaces to have 15,000 tons, indicates a total in the south of 60,000 tons of foundry iron. The two large producers of basic have about 35,000 tons on hand. This is exclusive of warrant iron, which is estimated at 50,000 tons. Assuming that the warrant iron is for the present off the market, the remaining 60,000 tons represent the available iron unsold. This exhibit makes the stock smaller than was generally believed. Half of this tonnage is on the yards of three large producers, which puts the market in a stronger position than if the iron were more widely distributed. We quote for prompt delivery, and second quarter, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton as follows:

Southern foundry No. 1	$14.75 to 15.25
Southern foundry No. 2	14.25 to 14.75
Southern foundry No. 3	13.75 to 14.25
Southern foundry No. 4	13.25 to 13.75
Southern No. 1 soft	14.75 to 15.25
Southern No. 2 soft	14.25 to 14.75
Southern gray forge	13.25 to 13.50
Northern No. 1 foundry	15.70 to 16.20
Northern No. 2 foundry	15.20 to 15.70
Northern No. 3 foundry	14.70 to 15.20
Northern 8 per cent silicon	19.70

Finished Material.—Rumors of low prices on finished products are being given less credence than a week ago and sales agents report booking business at the open schedules without difficulty. Specifications are moderate.

Coke.—The situation is unchanged. Prompt shipment coke continues quotable at our inside quotations and the ovens are still asking the outside figures on contract. Calls for coke on contracts and for prompt shipment are about the same as in the recent past, indicating neither increased nor decreased consumption. Prices in the leading coke producing districts are as follows:

	PER TON.
Wise county furnace coke	$1.60 to 1.90
Wise county foundry coke	2.00 to 2.25
Pocahontas furnace coke	1.65 to 1.85
Pocahontas foundry coke	1.85 to 2.25
Standard Connellsvills furnace coke	1.50 to 2.00
Standard Connellsville foundry coke	1.90 to 2.50

Old Material.—While the market is not quotably changed, a steadier tone prevails and there is slightly more business being done. Dealers' prices here are as follows:

Old No. 1 R. R. wrought, net tons	$13.50 to 14.00
No. 1 machinery, net tons	13.00 to 13.50
Old iron rails, gross tons	15.50 to 16.50
Old steel rails (re-rolling) gross tons	12.50 to 13.50
Old short lengths, gross tons	12.00 to 13.00
Old iron axles, net tons	15.00 to 16.00
Heavy melting scrap, gross tons	12.00 to 12.50
Stove plate, net tons	10.00 to 10.50
Heavy turnings	7.50 to 8.00
Cast borings, net tons	4.00 to 5.00
Car wheels, gross tons	13.50 to 14.50

PHILADELPHIA.

Keen Competition in Pig Iron and Finished Materials.

April 6.

Pig Iron.—The situation shows little change from the unsatisfactory conditions reported a week ago. March bookings of the leading interests were uniformly small, one or two concerns reporting them as the worst in a long period. Inquiries are coming in a little better, however, and there is some reason for believing that the lowered prices will develop a fair amount of business in the early future. Occasionally a call comes for delivery running over the remainder of the year, but producers generally are unwilling to quote for such shipment except at a premium over current prices ranging from 25 to 50 cents. There is, of course, a good deal of shopping in odd lots, particularly by pipe manufacturers, and low figures are ruling on these transactions. The Brooke furnace has gone out of blast, but the Dora stack of the Virginia Iron, Coal & Coke Co. has resumed operations after a considerable period of idleness. No. 2X Northern can be had at $15.25 to $15.50, furnace, for prompt shipment, and forge has been selling at about $15, delivered, but Alabama irons, now selling on a basis under $11 at the furnace, are making competition brisk. There is no activity in basic and malleable is also inactive. A sale of 500 tons of low phosphorus iron at $20.50, delivered is reported. Stocks are accumulating on the yards of most producers, which, however, will be able to stand this for a time, as accumulations to date have been limited. We quote, second quarter delivery, Eastern Pennsylvania plants, as follows:

No. 1X foundry	$16.75 to 17.00
No. 2X foundry	16.00 to 16.50
No. 2 plain	15.50 to 16.00
Standard gray forge	15.00 to 15.25
Basic	15.50 to 16.00
Low phosphorus	20.50
No. 2 Birmingham	15.75 to 16.25
No. 2X Virginia	16.50 to 17.00
No. 2 plain Virginia	16.00 to 16.50

Finished Materials.—The Isthmian canal commission will receive bids until April 19 on its iron and steel requirements for the ensuing year. These aggregate a handsome tonnage, including 3,600 tons of track spikes, 5,000 tons of assorted plates, 2,000 tons of shapes and about 5,500 tons of bars, but the call for tenders is qualified so as to permit of specifying either over or under these amounts. Keen competition is prevailing in connection with the steel requirements of the Queen Lane filtration plant project, which has been re-let during the week, this time to the Millard Construction Co. at a bid well under that secured at the previous opening. About 250 tons of structural shapes and from 1,800 to 2,200 tons of steel bars for concrete reinforcing will be needed. The award of the general contract for the Curtis Publishing Co. building has been delayed, but some announcement is expected at any time. There are still well authenticated reports that the Baltimore & Ohio is to enter the market for a large number of steel cars, and a fair amount of scattered railroad buying is developing, but the situation is otherwise unchanged. We quote: Structural shapes, 1.45 to 1.55c; plates, 1.45c to 1.50c, with usual extras; steel bars, 1.35c to 1.40c; refined bar iron, 1.35c to 1.45c.

Old Materials.—Cast borings are in better demand and have advanced slightly on a number of sales ranging up to 100 tons each. There is also a little better feeling in steel scrap, but no important sales have been made and quotations are no higher. The strike continues among the puddlers in this district and no very vigorous efforts are being made to induce them to return, owing to the unsatisfactory condition of the trade. We quote, gross tons, Eastern Pennsylvania delivery, as follows:

Old steel rails (re-rolling)	$14.50 to 15.00
No. 1 steel scrap	13.50 to 14.00
Old steel axles	17.00 to 17.50
Old iron axles	18.50 to 19.50
Old iron rails	16.50 to 17.00
Old car wheels	14.00 to 14.50
Choice scrap R. R. No. 1 wrought	15.00 to 15.50
No. 1 yard scrap	13.00 to 13.50
Machinery scrap	14.00 to 14.50
Low phosphorus scrap	17.00 to 18.00
Wrought iron pipe	13.50 to 14.00
No. 1 forge fire scrap	11.75 to 12.25
No. 2 forge fire scrap, ordinary	7.00 to 8.00
Wrought turnings	9.75 to 10.25
Axle turnings, heavy	11.00 to 11.50
Cast borings	8.50 to 9.00
Stove plates	11.75 to 12.25

NEW YORK.

Improvement in Pig Iron—Some Good Structural Contracts.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., April 6.

Iron Ore.—Shipments on the foreign ore contracts closed some months ago are going ahead slowly, particularly in the case of European product, which is being held up to a considerable extent, partly because of tariff uncertainties and partly because furnaces are not needing the material. Trans-Atlantic freights, which were in the neighborhood of six shillings and a half at the time these contracts were closed, have advanced to about eight shillings. There is no further selling of foreign ores, and little interest is manifested in lake ores.

Pig Iron.—A special meeting of the Eastern Pig Iron Association will be held at Philadelphia on Wednesday, it is understood with the idea of securing concerted action against the reduction in the scrap duty to 50 cents. In this district, the past week has developed better selling and better inquiry than for some weeks past, so much so, in fact, that the trade believes the low prices are beginning to have their effect. A feature of the busines closed was one lot of 1,000 tons of basic for prompt delivery to an eastern steel works, this being the first important sale of basic in this district for about two months. There was also some selling of low phosphorus iron, a 300-ton lot of the Lebanon product going at about a $15 furnace basis, which is a considerable reduction from the last sale reported. The standard low phos product is now held at $19, Eastern Pennsylvania furnace. The United States Cast Iron Pipe & Foundry Co. has bought an aggregate of 1,500 tons of high silicon irons for early shipment to Holyoke and Harrison, most of the business being taken by a Buffalo interest at low prices. A Buffalo producer has also sold one lot of over 2,000 tons of malleable for last half delivery at a price of about $15 furnace. The New England malleable interests are still feeling the market, but have not bought. A Virginia pipe maker has taken on 2,000 tons of low grade iron, another pipe works has bought 500 tons, there have been small sales of charcoal iron and several moderate tonnages of foundry have been disposed of. Furnaces are resisting efforts to book ahead of the second quarter. The Steel Corporation is operating about 64 per cent of its total capacity and has materially reduced its stock of late. Edgar Thomson B has blown in during the week. We quote, second quarter delivery at New York tidewater, as follows:

Northern foundry No. 1	$16.50 to 17.00
No. 2X foundry	16.00 to 16.50
No. 2 plain	15.50 to 16.00
No. 2 southern foundry	15.00 to 15.50
Malleable	17.00 to 17.50
Basic	15.50
Gray forge	15.00 to 15.50

Ferro-Alloys.—The eastern market is featureless, but considerable business is current in the west, where inquiries aggregate over 2,000 tons of ferro-manganese. One lot of 500 tons for Chicago delivery has just been closed and another of 800 tons is reported closed for western shipment. The price on large lots is $41, Baltimore. In ferro-silicon inquiries aggregate about 200 tons and small sales have been made at $60.50, Pittsburg. The tariff agitation is proving considerable of a factor in the alloys market at present.

Finished Materials.—Important structural contracts closed during the week include 4,000 tons for the Whitney Central bank, New Orleans, which will be supplied by Milliken Bros., Bethlehem shapes being used. The American Bridge Co. will furnish the 11,000 tons of steel required for bridge work on the Florida East Coast. This interest is now operating at about 60 per cent of its capacity, an increase of 10 per cent over last month. About 2,300 tons of center girders for car repairs of the Chesapeake & Ohio will be supplied by the Virginia Bridge & Iron Co. The Noelke-Richards Co. has the contract for 450 tons of steel for the First National Bank at Fort Worth, Texas. The New York Edison power plant, calling for 10,500 tons, will be let in the near future; this is a project which was up two years ago and has recently been revived. It develops that the Johns-Manville warehouse at Milwaukee, taken by the Milwaukee Bridge Co., has been changed from a steel to a reinforced concrete job and will require only 130 tons of steel. James Stewart has the general contract for the Onondaga hotel at Syracuse. It is expected that in the near future the Trinity Corporation will place contracts for its warehouse, 2,000 tons; the Anaconda Copper Mining Co., will purchase 2,500 tons of steel towers; two pier sheds, requiring 1,200 tons each will be placed in San Francisco; and the Chicago and Northwestern will call for about 6,000 tons in addition to work already placed.

Structural shapes are quoted nominally at the 1.30c, Pittsburg, base for plain material. A fair plate business is noted, 1.40c, Pittsburg, is being secured for small lots. The plate requirements for the repair of the Florida are about 90 tons and considerable other local ship yard business is developing. Billets are quiet and specifications are poor. The iron bar market is dead, with prices nominally at 1.35c, New York. We quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.46c; beams, 3 to 15 inches, 1.46c; tees, 3 x ¼-inch and heavier, 1.51c; plates, carloads, tanks, 1.46c; marine boilers, 1.86c; bar iron, 1.35c to 1.40c; soft steel bars, 1.36c; sheets, No. 28, black, 2.56c.

Cast Iron Pipe.—Concord has opened bids on 1,000 tons of 16-inch, but no award has been announced. A fair tonnage is involved in private lettings, but prices continue extremely low.

Old Materials.—Except for some moderate call for wrought pipe, wrought turnings and cast borings, the market is quiet and featureless. Prices continue low, and there is little general demand. We quote, gross tons, New York delivery, as follows:

Old steel rails (re-rolling)	$13.50 to 14.50
Relaying rails	19.00 to 19.50
Old car wheels	12.50 to 13.00
Old iron car axles	15.00 to 15.50
Old steel car axles	12.50 to 13.00
Heavy melting steel	10.75 to 11.25
No. 1 railroad wrought	13.50 to 14.00
Iron track scrap	11.50 to 12.00
Wrought pipe	9.00 to 10.00
Cast borings	5.50 to 6.00
Wrought turnings	7.00 to 7.50
Heavy cast scrap	12.50 to 13.00
Railroad malleable	12.50 to 13.00
Stove plate	9.00 to 9.50
Grate bars	8.50 to 9.00

ST. LOUIS.

Limited Sales of Pig Iron—Few Changes in Prices.

April 5.

Pig Iron.—One order for 150 tons of Southern No. 2 iron was placed in the St. Louis territory last week for shipment over the next three months on a basis of $11.50, Birmingham, and a few single orders for the car lots were received. Inquiries are about the same as the previous week. The market underwent very little change, most of the furnaces adhering to a price of $11.50, Birmingham, with one or two larger companies quoting as low as $11. Some buyers assert that they have placed orders as low as $10.50. Our quotations, delivered, to which the freight of $3.75 from Birmingham has been added, follow:

No. 1 southern	$15.75 to 16.25
No. 2 southern	15.25 to 15.75
No. 3 southern	14.75 to 15.25
No. 4 southern	14.25 to 14.75

Coke.—The best-selected 72-hour Connellsville foundry coke is firm at $2.15 to $2.25 ovens for both prompt and future deliveries. Some grades of Connellsville foundry are quoted as low as $2, and some high-sulphur coke can be bought for $1.90. Connellsville 48-hour furnace coke is bringing $1.75 to $2 and medium grades are selling for $1.50. Virginia and West Virginia coke remains unchanged from the previous week, so far as prices are concerned.

Old Material.—The market is very dull, but dealers assert that prices are as follows:

Cast iron borings, free from foreign material, net tons	$ 6.00
Steel axle turnings, gross tons	12.00
Steel railroad axles, net tons	17.50 to 18.50
Iron railroad axles, net tons	19.00 to 20.00
Miscellaneous steel scrap, gross tons	12.50 to 13.00
Old car wheels, gross tons	16.00
No. 1 railroad cast scrap, net tons	12.00 to 12.50
Heavy machinery cast, net tons	13.00 to 14.00
Stove plate and light cast, net tons	11.50
Sheet iron, net tons, uncut	5.00
No. 1 railroad wrought, net tons	13.00 to 13.50
Railroad malleable, net tons	12.00 to 12.50
Heavy melting steel, net tons	13.00 to 13.50
Relaying rails, net tons	17.00 to 18.00

The rebuilt Tod stack of the Youngstown Steel Co., Youngstown, O., was lighted March 22.

BUFFALO.

Business Dull, But Some Indications of Improvement Appear.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, April 6.

Pig Iron.—It is pretty generally believed that the pig market has reached the limit of depression and that conditions will straighten out gradually. Certain interests which made prices that kept the market unsteady have ceased doing business at bottom prices, which has left matters in a more hopeful condition. There are no definite schedules of prices as yet, so it is necessary to continue quoting as below. The price of iron here, in a degree, depends on the amount of tonnage desired, the nature of the inquiry, etc. Prompt delivery orders are figured at 50 cents to 75 cents less than prices quoted on some grades. The demand has not diminished the past week, but the business is very dull as for weeks past, with some indication of betterment. We quote f. o. b. Buffalo, as follows:

No. 1X foundry	$16.25 to 16.75
No. 2X foundry	15.75 to 16.25
No. 2 plain	15.25 to 15.75
No. 3	15.00 to 15.50
Malleable Bessemer	16.50 to 17.00
Gray forge	14.75 to 15.25
Charcoal	20.50 to 21.00

Finished Products.—Specifications continue and business is in a fair state except for some conflict in prices. Certain interests declare they are running ahead on tonnage placed the past month over the general average. A number of specifications on heavy work are expected out soon. The Lafayette Hotel Co., of Buffalo, is expected in the market any day for structural for a seven-story annex. This addition will cost $300,000. In Syracuse, N. Y., the Onondago Hotel Co. letting for general construction, went to the James Stewart Construction Co., of Chicago. The structural steel contract is pending. A permit has been issued by the City of Buffalo to the Washburn-Crosby Co., to build a concrete elevator at Michigan and Gonson streets. The specifications call for a $125,000 structure.

BIRMINGHAM, ALA.

Inquiry Furnishes Some Encouragement, but Sales are Limited.

April 5.

Some inquiry received in the southern territory for pig iron in the last few days, together with a few sales, indicating that some of the consumers who have been buying from hand to mouth were considering entering the market,

has given some encouragement. That the market is still very dull is not denied by any one. The furnace companies here are hoping for the best and every day look forward to see what the next 24 hours will bring forth. Quotations appear a little stronger this week. Several of the companies are holding No. 2 foundry for $11.50 per ton, but $11 is the usual quotation. The shipment of the iron from this district appears to be steady though nothing like what it has been. The home consumption is most healthy, brought about mostly through the great activity on the part of the pipe makers. Not only are the cast iron pipe makers busy but the soil pipe men are beginning to feel a better condition.

The following quotations are given for old material in the Birmingham district:

Old iron rails	$13.50 to 14.00
Old iron axles	13.00 to 14.00
Old steel axles	12.00 to 12.50
Old steel rails	9.00 to 9.50
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	10.00 to 10.50
No. 1 country	9.00 to 9.50
Heavy melting steel	8.50 to 9.00
Old steel boiler plate	6.50 to 7.00
No. 1 machinery	10.00 to 10.50
Old standard car wheels	12.00 to 12.50
Tram car wheels	10.50 to 11.00
Stove plate	8.50 to 9.00
Cast iron borings	4.00 to 4.50

BRITISH IRON MARKET.

Business in Both Pig Iron and Finished Material Greatly Depressed.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., March 27.

Pig Iron.—The British pig iron market is once more responding with remarkable exactness to the American position. There has been more complaining this week among pig smelters in the Birmingham district than for many months past, inasmuch as business is practically impossible, except on the basis of concession. They assert that dear materials and wages make it impossible to sell more cheaply, but they are too anxious for the future to reject any opportunity of doing business. Orders have been taken at reductions probably of about 6d, compared with a week ago. In Derbyshire, smelters have formed some kind of agreement not to go below present figures, and this may extend. It is a remarkable circumstance that there are practically no stocks in South Staffordshire, and hardly any in Northamptonshire and Derbyshire. In Cleveland the position is slightly improved, No. 3 selling at 46s 6d ($11.38), an increase of about 5d during the week. The shipping business is also showing a little more life, and it is clear that in spite of the present gloom there is an undercurrent of hope, seeing that future buying is still on the basis of 7d per ton above current figures. In the hematite business, there is practically little or no improvement notwithstanding greater activity among steel makers. The Cleveland stocks of ordinary iron are 192,000 and are still increasing, but the increase is only 4,230 tons on the week, which is a little better than of late. In spite of the dullness, there is still no stock of hematite in the public stores, what there is being restricted to private yards.

Finished Material.—The finished iron trade is still struggling in the deep trough of depression. The outlook for the quarterly meeting next week is extremely depressing, as much business cannot result notwithstanding the slight increases in inquiry. Production is painfully unprofitable, yet makers are still squeezable, and some are beginning to get angry at the entire absence of agreement which it is said is keeping prices several shillings below what they need be to meet any outside competition. Unless the strain is relieved, ruin will presently confront some of the firms.

The wages board return in the North of England just issued is very significant. The output for January and February was less than in any two months last year, and the smallest known for 40 years. This is partly due to the increasing use of steel, which is reducing the output of iron. But it is ominous that the quantity produced a year ago by the firms under the Northern Board was 13,274 tons, and this year 6,034 tons. Prices too have been lower than for any period in three years. The average selling figure was £6 11s 7d compared with £6 13s 5d for November and December. This carries a reduction of 2½ per cent and 3d for puddling, bringing the latter wage down to 8s 6d. No doubt whatever is entertained that the South Staffordshire return, which is due in a day or two, will also give a reduction.

GERMAN MARKETS.

Prices Very Irregular and Business, Except in Wire, Very Dull.

Dusseldorf, March 20.—During the last few weeks, business has been subjected to the pressure of the crisis in the near east. The uncertainty about the settlement of the questions now pending between Servia and Austria prevents any feeling of confidence. Besides the very long and severe winter has delayed the commencement of the building period. Now, after the spring has set in, one expects a moderate animation of the trade in building material, the more as money is very easy, the official bankrate being now 3½ per cent. However, admitting that a few waves of prosperity will appear during 1909, the general opinion is, that this year will be the worst we have seen in a long time.

Coal and coke prices are unchanged, as they are kept high by the syndicate, but buyers try more and more to make themselves independent of that syndicate; especially the South of Germany is taking a lot of English coals. The enormous coke stocks are just as large if not greater. In pig iron, no business is being done; buyers take the contracted quantities very slowly and works are very short of orders. Old material is rather firm and in good demand.

In heavy rolling mill material, business is quite stagnant; even for export there is nothing to be done. In bar iron and plates, fresh efforts have been made to form new syndicates, but have been dropped again without any result. Only in wire and wire products does the trade remain good and active.

In all parts of the trade, the prices are very irregular; producers take what they can get; thus it is rather difficult to give correct prices.

METAL MARKET

ST. LOUIS.

April 5.

Lead and Zinc.—A heavy shipment of ore was registered in the Joplin district last week, with zinc ore selling at $38 for 50 per cent zinc, with the bulk of the sales being made at from $36 to $37.50. The output of many of the mines, which assert they cannot earn a profit at present prices, is curtailed and the surplus zinc ore is light. The price has not retarded the output to any great extent, however, in Joplin, Miami and Spring City.

Lead ore manifested strength at a top base of $53 a ton, with extra grades selling as high as $54 and $55. Calamine brought $18.50 base, with a high price of $23. An increase of 15 cents was registered in the St. Louis pig lead over the preceding week, and spelter was steady at $4.65. New York pig lead was stronger at $4.10, and spelter was 5 cents higher at $4.82½.

NEW YORK.

April 6.

Copper.—Enough business has been done during the week, largely on domestic account, to hold the price level stationary at the figures given a week ago. There is evidence that consumption is increasing moderately, and this has strengthened the situa-

tion to a considerable extent. We quote: Lake, 12⅞c to 13c; electrolytic, 12½c to 12⅝c; casting, 12⅜c to 12½c.

Pig Tin.—A better volume of orders has developed of late, and this slight improvement has been sufficient to hold the advance recorded late last month. Current selling is on the basis of 29¼c to 29¾c.

Pig Lead.—The market continues the strength noted a week ago and fair sized orders are being taken on the basis of 4.07½c to 4.10c, New York.

Spelter.—There is no change from a week ago, current business being small and featureless at 4.75c to 4.77½c, New York.

Antimony.—Cookson's, 8c to 8⅛c; Hallett's, 7¾c to 8c; ordinary brands, 7⅜c to 7⅝c.

CHICAGO.

April 6.

There has been a week of good inquiry and fair buying, though prices on small lots do not show any material change. Tin is stronger and lead is advanced. Spelter also is in good demand and firm. We quote as follows:

Lake copper, carload lots, 13¼c to 13½c; castings, carload lots, 13c to 13¼c; pig tin, 31c to 31½c; spelter, 4.90c to 5c; pig lead, desilverized, 4.10c to 4.20c in 50-ton lots; corroding, 4.65c to 4.70c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 6¾c list f. o. b. LaSalle in car lots of 600-pound flasks; Cookson's antimony, 10½c to 11c; other grades, 10c.

The scrap metals are inactive and the trade is dull. We quote buying prices as follows:

Copper wire, 11¼c; heavy copper, 11c; light copper, 10¼c; heavy red brass, 10¼c; heavy yellow brass, 8¼c; light brass, 6c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; tea lead, 3⅛c; lead scrap, 3.50c; zinc, 3.25c; tin pipe, 24c; tin foil, 22½c; pewter, 17c; electrotype plates, free from wood, 3.75c; electrotype dross, 2.60c; stereotype plates, 4c; stereotype dross, 3.75c; prime slab zinc dross, $45 per ton.

New St. Louis Furnace.—Details for the construction of a blast furnace in the southern portion of St. Louis, costing about $1,500,000, have partially been worked out by E. E. King, industrial agent of the Missouri Pacific Railway Co., and others interested, and the plant will probably be completed before the close of the present year. The promoters have secured an option on a site of about 40 acres. The daily capacity of the plant will be about 300 tons of pig iron. Part of the equipment has been purchased. The new company will get its ore from the Williamsville-Keener district in Southeast Missouri, covering an area of about 40 square miles, 150 miles south of St. Louis. The ore analyzes from 55 to 65 per cent iron.

SHIP BUILDING PLANT FOR ASHTABULA, O.

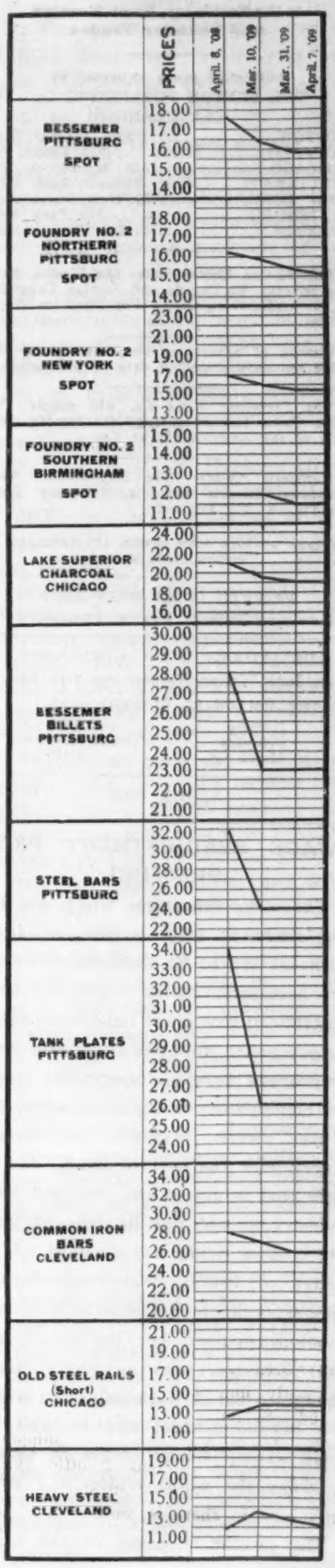
Announcement is made that the Great Lakes Engineering Works will establish a ship building yard at Ashtabula, O. Final contracts for the construction work were signed a few days ago by A. C. Pessano, president of the Great Lakes Engineering Works, General Manager D. C. Moon of the Lake Shore railroad, and R. P. Reidenbach, president of the Ashtabula chamber of commerce. The Lake Shore and Pennsylvania railroads have encouraged the building of the yards at Ashtabula, and are preparing to increase their track facilities for handling the material that enters into ship building. Work on the new plant will be started very shortly. This is the first entrance of the Great Lakes Co. into the Lake Erie field, its yards heretofore having been located at Ecorse and St. Clair, Mich.

EARNINGS OF BETHLEHEM STEEL CO. LAST YEAR.

The report of the Bethlehem Steel Corporation for the year ending Dec. 31, 1908, which has just been made public, shows the total net income for the year of $2,192,355, a decrease of $46,602, compared with 1907. Making allowance of $370,000 for depreciation and after payment of interest charges, the net income for the year was $366,-864, a decrease of $1,251,925. The value of unfilled orders at the end of the year was estimated at $7,972,502, compared with $8,514,655 at the end of 1907.

The following bids for 8-inch cast iron pipe, aggregating 103 tons were recently received by the board of public works of San Diego, Cal.: The Western Metal Supply Co., $34.10 per ton; Christian Froelich, $33.90 by rail and $32.90 by steamer; Pearson Rouding & Co., $35; United States Cast Iron Pipe & Foundry Co., $34.85; James B. Clow & Son, $36; Hazard-Gould & Co., $34.50.

PRICE CHART.



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THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January	5,506
February	5,346
March	5,396

April 8, 1909.

WAGE READJUSTMENT PROGRESSING.

The wage reductions which are being made at steel works and blast furnaces are to be deplored, but they are necessary. Some hopes had been entertained that wage reductions might be postponed until the employers were in position to offer considerably steadier employment to the men, while employes were disposed to couple wages with the cost of living, and to hold that wages in the iron and steel industry should not be reduced until the cost of living had declined. It is better, of course, that readjustments should occur in an orderly and harmonious manner, but the details are not all subject to dictation; some changes occur through influences which are beyond control and to wait on their accomplishment might be simply to delay the whole matter and work an injury in the long run.

The proximate cause of the wage reductions is of course the decline in selling prices, but the fundamental cause is the one which affects prices and wages equally; the fact that industry had outrun its bounds, as it has done at many times in the past, and required a general readjustment.

The wage reductions being made are very small in comparison with the declines which have occurred in prices. While the total wage cost of a piece of finished steel is high, a large part of that wage cost lies in wages which are dependent upon the payment of freights, in wages paid directly by the railroads and wages paid by those who supply materials to the railroads. As to this portion of the wage cost, the industry finds no relief. The wage reductions being made at blast furnaces comprise but a very small part of the cost of making pig iron, and even if to these reductions there were added reductions in the ore and coke regions, the total amount would not begin to make up for the decline which has occurred in pig iron.

There is no immediate prospect of the wage reductions influencing further declines in the selling prices of steel products. The declines in prices have come first and the wage reductions are merely the shifting of a portion, and a rather small portion, upon the shoulders of labor.

While the general readjustment and liquidations cannot be effected overnight, many evidences have accumulated to disprove the theories advanced more than a year ago in some quarters that the financial panics of June, 1893, and October, 1907, had much in common. Particularly in the iron industry, there is much more reason to couple the depression of 1908 with the depression of 1888, 20 years earlier, than with the depression which started in 1893 and had to run a course, and a very rocky one, of five years before prosperity was restored. The fundamental conditions in 1888 and 1908 were distinctly similar in many respects. In 1887 and immediately preceding years, there had been heavy railroad building, while in 1907 and immediately preceding years there had been heavy railroad improvements. In 1887 there were heavy importations of iron and steel, largely rails, due to the exceptionally high pressure demand. In 1906-7 there were not as heavy importations, due chiefly to circumstances largely fortuitous, but there were fairly heavy — certainly abnormal — importations of pig iron. In 1888 there was a liquidation in prices which in 1908 occurred with respect to pig iron but did not occur with respect to most finished products. After 1888 there was a sharp improvement in production, new records being made in many commodities, including pig iron, while 1890 showed a further and still larger advance.

An important feature to be noted about 1889, however, was that prices did not, on the whole, score any important advances. A few commodities were higher, but the general average was slightly lower, and this in the face of decidedly heavier demand and production. Even 1890, with its still greater increase in production, showed only a very moderate increase in the general level of prices.

Yet the iron and steel industry made considerably larger profits in 1889 than in 1888, and in 1890, it made still larger profits. The increased profits were due not to higher selling prices but to lower costs of production. After the high pressure of 1887, the industry used its acquired vitality to lower its costs by improved methods and appliances. The same course is before the trade now, and a good start has been made upon it.

The conditions confronting the trade are different in many vital respects from those which confronted the industry after the 1893 panic. Then there was absolute prostration; producing interests felt themselves well nigh crushed. When a feeble start had been made, in 1895, the free silver scare effectually dispelled the hopes which had arisen. The iron and steel industry is in no such position today and has not before it the obstacles to recovery it had then. The readjustment is in progress and may be found to be more orderly than is now anticipated. It will lie at least as much in cost of production as in selling

prices, and the wage reductions now being made are an important step in that direction.

AN ARGUMENT BASED ON POOR INFORMATION.

We have received the following communication from a Chicago manufacturer of machinery:

Editor THE IRON TRADE REVIEW:

We take the liberty of addressing you on the pig iron question, from a machinery manufacturer's stand-point, a class in the north that has had the hot end of the stick always.

Why should pig iron at a lake point sell for more than it does at Birmingham, Ala.? Is it not simply because of a trust in pig iron, fostered by a freight rate duty? It certainly costs less to produce the pig iron in the north than in the south. Now, the northern manufacturer of pig iron is howling because of a reduction in duty of $1.50 per ton on pig iron and objects to free ore and cheaper scrap iron.

It certainly comes with very poor grace to see a lot of men pass resolutions, asking for continuous favors, while the average manufacturer, who uses their product, is living a hand to mouth existence, simply because conditions have permitted them to exact an unfair profit on pig iron.

Give us free ore, free scrap and free pig iron. It will reduce the cost of pig iron to the northern manufacturer and give him a chance to compete, not only with the manufacturer in the south, but with the English manufacturer who, we understand, purchases iron from the states at a price of $6.00 a ton less than it can be purchased in Chicago. WILLIAM R. PERRIN & CO.

Chicago, April 3.

Our correspondent is misinformed on some important points. In view of the keen competition among manufacturers of pig iron in the central west, it is absurd to talk about a trust in pig iron. Testimony varies as to the relative cost of manufacturing pig iron in the north and in the south, but we believe our correspondent will find very few well informed people who will support his view. There is some difference of opinion among pig iron manufacturers as to what the duty ought to be on pig iron and ore, but we believe the vast majority of them would be satisfied with $3 on pig iron and 25 to 30 cents on iron ore. All are united in opposition to lowering the duty on scrap to 50 cents, unless provision can be made for preventing the bringing in of pig iron as old material. If, as our correspondent says, the English manufacturer ever purchased iron from the United States $6 less than it can be purchased in Chicago, it was a very exceptional transaction under unusual conditions.

PANAMA NEEDS

Shown in Proposals Asked for by the Canal Commission.

The Isthmian Canal Commission has asked for proposals upon one of the largest assortments of iron and steel material which the government has yet submitted to manufacturers in connection with Panama construction work. The various products are for delivery over the fiscal year ending June 30, 1910, and the commission reserves the right either to increase or reduce by 50 per cent the stipulated present quantities of material. Bids will be received until noon, April 19.

Among the principal items listed in the circular calling for proposals are the following, some of which are approximated:

6,000 tons of 70-pound rails; 150,000 tie plates; 25,000 angle splice bars; 5,000 rail brakes; 100,000 track bolts; 600,000 track spikes; 100,000 merchant bars, either bar iron or soft steel, different sizes; 40,000 refined iron bars; 25,000 steel sheets of various gages; 90,000 corrugated roofing sheets; 5,000 galvanized sheets; 11,000 structural shapes; 50,000 machinery steel bars; 6,000 tool steel bars; 2,000,000 feet of wrought iron or steel pipe of sizes ranging from ¼ to 12 inches; 700,000 feet of chain; 380,000 feet of iron and steel cables; 70,000 feet of cast iron pipe and fittings. In addition, bids are solicited on large quantities of nuts, bolts, rivets, washers and other metal products in tin, copper, lead, brass, aluminum and zinc.

SOUTHERN STEEL CO. AFFAIRS.

Birmingham, Ala., April 6.—Despite the fact that considerable litigation has been started recently looking to a review of the order of sale, it is believed that the properties of the Southern Steel Co., bankrupt, will be put on the block on April 12, as advertised. The re-organized company is said to be prepared to buy in the properties. Claims against the company and stock which was not placed in the reorganized company are being bought up, though prices for the same were greatly increased recently, people holding it having hopes of being able to collect when the new company gets in control.

The stack of the Colonial Iron Co., at Riddlesburg, Pa., was blown out March 13 for repairs.

STRONG COMPETITION

Encountered by the Receivers of Milliken Bros.—Term Extended.

At the request of the receivers of Milliken Bros., Inc., their term has again been extended by Judge Geo. C. Holt, of the United States district court. April 17 is set as the last date upon which new business can be accepted by the receivers, but they are to continue the bridge and structural shops on such contracts as are then on hand. With the large contracts recently secured, it is stated that there is sufficient work in sight to operate the shops for at least six months. This arrangement is understood to have been made with the idea of securing a reorganization at an early date.

The petition of the receivers states that, since their appointment, June 11, 1907, they have completed or disposed of all contracts held at that time, realizing on them an investment of $456,999, and additional profits of $118,537. Operations during the receivership, despite the business depression, have yielded additional profits of over $1[illegible]0,000, no allowance being made for receivers' expenses, interest on bonds and other expenses not connected with the fabricating business. At their appointment the receivers found $70,000 cash in the treasury; they have now over $490,000, and have paid out in addition $360,000 to mortgage bond holders and $61,000 for plant preservation.

Commenting on the present state of the steel trade, the receivers say:

"Your petitioners have to report that, if anything, the conditions in the steel business are worse today than they have been even at the time when they have reported heretofore. The recent cut in the price of steel has not produced any improvement in prices for fabricated work, although there is an increased tonnage as a result of a desire to take advantage of low prices. The sharp competition in the fabricating business has given full benefit of the cut in steel to the builder, but the manufacturer is in no better position to operate business at a profit."

The petitioners add that they are led to the conclusion that it is unwise to continue longer than absolutely necessary the operation of the business. Efforts are undoubtedly being made in great earnestness by creditors and stockholders to secure some reorganization of the company.

Decrease in Rate of Iron Making

The blast furnace figures this month show a total production of coke and anthracite pig iron in March of 1,822,024 tons, compared with a production of 1,682,470 tons in February. This is an increase of 139,554 tons, or 7.7 per cent. The production in March is divided as follows: Merchant iron, 659,320 tons; non-merchant iron, 1,135,269 tons; spiegel and ferro, 27,455 tons, being increases over February 48,538 tons, 63,272 tons, and 15,684 tons, respectively. The production of merchant iron shows an increase over February of 7.9 per cent and of non-merchant iron an increase of 5.9 per cent. The increase in production over January amounts to 34,551 tons, or 1.9 per cent, divided between merchant iron 12,732 tons and non-merchant iron 9,728 tons, being increases of 1.9 and 0.8 per cent, respectively. The production by months is shown in the following table:

MONTHLY PRODUCTION.

	1909.	1908.	1907.
January	1,787,473	1,043,374	2,194,801
February	1,682,470	1,086,809	2,047,036
March	1,822,024	1,229,856	2,216,709
April		1,155,122	2,226,708
May		1,168,002	2,291,030
June		1,106,300	2,237,420
July		1,228,604	2,253,243
August		1,365,019	2,243,656
September		1,416,252	2,174,148
October		1,573,824	2,359,690
November		1,582,314	1,820,558
December		1,723,664	1,234,733
Total	5,291,967	15,680,140	25,299,732

To obtain a fair idea of the conditions prevailing in the blast furnace industry, however, it is necessary to go back to the January figures, inasmuch as February, being a month of but 28 days, the increases in production are but natural, due to the longer month. The total percentage of possible output made in January was 56.3 per cent, in February 57.3, while in March it dropped again to 56.9 per cent, showing a slight increase in the rate of production over January, but a decreased rate when compared to the February figures. This is further borne out by a comparison of the daily production during these three months. In March the daily production was 58,775 tons, in February it was 60,051 tons, and in January 57,654 tons. Thus, the daily production in March shows a decrease of 2.2 per cent, compared with February, but an increase of 1.9 per cent when compared with January. The following table shows the daily production of the various months of last year, compared with those of the present year. The average daily capacity in blast on the last day of March was 58,379 tons. This is a decrease from the active capacity in blast on the last day of February of 4,693 tons, and a decrease from the active capacity in blast on the last day of January of 1,064 tons. A number of stacks have gone out of blast during the month, while some others have come in, the net result, however, being a decrease in the active capacity.

AVERAGE DAILY PRODUCTION.

	1909.	1908.
January	57,654	34,316
February	60,051	37,476
March	58,775	39,672
April		38,504
May		37,677
June		36,876
July		39,632
August		44,065
September		47,208
October		50,764
November		52,744
December		55,602

Considering the increases in production in detail, the increase in Pennsylvania was divided, approximately, between 21,000 tons of merchant iron and 14,000 tons of non-merchant iron. Ohio increased its production in merchant iron 9,000 tons, and in non-merchant iron 25,500 tons, approximately. Alabama showed increases of, approximately, 5,000 tons in both merchant and non-merchant iron, while Virginia's production shows a decrease of about 600 tons in merchant iron. New York shows an increase of about 7,000 tons of merchant iron and about the same production of non-merchant iron, as in February. Illinois increased its production over February about 2,000 tons of merchant iron and 7,000 tons of non-merchant iron. The Tennessee group shows a sharp decrease from the February figures, there being 1,000 tons less of merchant iron produced and 7,000 tons less of non-merchant iron. The Maryland group indicates a heavy increase over February, there being 5,000 tons more of merchant iron and 20,000 tons more of non-merchant iron. The Georgia group shows an increase of about 1,000 tons of merchant iron.

The figures all show that the merchant furnaces have been increasing their output relatively faster than the furnaces making steel-making iron.

ADDITIONAL REDUCTIONS.

Several additional reductions in wages in steel plants and allied industries have been put into effect in Pittsburg and tributary districts. The Jones & Laughlin Steel Co. on April 1 reduced all its mill employes 10 per cent. The Republic Iron & Steel Co., in addition to the reduction made in the wages of its mill and blast furnace labor has lowered the pay of its coke oven employes 10 per cent, while several other independent coke operators have taken similar action. The main body of Connellsville coke makers who are accustomed to pay the scale of the H. C. Frick Coke Co., are waiting to ascertain the attitude of this company upon the wage question.

MARCH FURNACE REPORT.

STATES	NO. OF STACKS.	NO. IN BLAST ON LAST DAY OF MONTH. MAR.	FEB.	PERCENTAGE OF TOTAL POSSIBLE OUTPUT MADE.	AV. DAILY CAPACITY IN BLAST LAST DAY OF MONTH.	ACTUAL TONNAGE MADE. MERCHANT.	NON-MERCHANT.	TOTALS. MAR.	FEB.
Pennsylvania	153	95	94	61.9	24,880.5	202,180	552,806	754,986	717,965
Ohio	66	41	40	58.9	13,013.4	135,558	243,083	378,641	334,977
Alabama	46	22	23	48.6	4,591.4	114,850	30,023	144,873	134,909
Virginia	24	12	12	49.3	937.2	28,665	———	28,665	27,243
New York	25	12	14	53.3	3,319.2	64,889	49,344	114,233	107,640
New Jersey	9	3	3	33.3	631.5	19,577	———	19,557	19,519
Illinois	25	15	16	62.2	5,295.0	17,383	147,628	165,011	155,473
Tennessee, West Virginia, Kentucky	18	9	10	43.6	1,423.2	36,721	9,238	45,959	53,772
	4	1	2						
	7	2	2						
Maryland, Wisconsin, Colorado, Indiana	4	2	2	69.5	3,725.8	20,397	103,147	123,544	99,070
	6	4	3						
	6	3	3						
	4	4	4						
Georgia, Texas, Minnesota, Michigan, Missouri	2	1	1	48.7	561.6	19,100	———	19,100	20,131
	3	0	0						
	1	0	1						
	2	2	2						
	1	1	1						
Spiegel—All states								10,488	4,165
Ferro—All states								16,967	7,606
Total	406	229	233	56.9	58,378.8	659,320	1,135,269	1,822,024	1,682,470

RADICAL CHANGES.

(Continued from first page.)

agreed upon in the committee at 20 cents a ton, instead of the free list as provided in the Payne bill. With this for the starting point of changes, the pig rate may be moved up to $3, instead of the Payne bill rate of $2.50. This will cause a corresponding increase in the scrap rate, in addition to the proposed change in phraseology to prevent the importation of broken pig as scrap. It is suggested that the steel rail men prefer to have the rail rate placed at $5 a ton. With the opposition to such advances, and the reports regarding steel rail exports, the chances are not favorable to the increase above the Payne bill rate. Similar conclusions appear to be justified with respect to structural steel.

An issue has been raised with respect to the rates to be borne by the blast furnace grades of alloys. It is claimed that the proposed rate of 15 per cent on the ferro-alloys is disproportionately high compared wth the $3 rate proposed on pig iron. For this reason the rates on these alloys may be changed to comport with the specific rate on pig.

Drawback Provision.

A lively controversy is on over different features of the drawback provision, and also with regard to the reciprocity item covering coal imports.

The ways and means committee was able to get the rule adopted providing for a vote on the Payne bill on Friday without making a concession which would provide for a vote on the coal item. This means that unless the committee determines to make some change in the coal paragraph it will go with the completed bill to the finance committee as it now stands. Vigorous opposition comes from the West Virginia and Eastern Pennsylvania miners to the free admission of Nova Scotia coal in competition with coal from those sections of the United States which market on the Atlantic seaboard. Similar opposition comes from the coal operators in Wyoming, Kansas and other states of the west, and even from the Puget Sound district, where British Columbia competition is feared.

In regard to the drawback provision the question is complicated by the demand of the tin plate producers in this country that the drawback allowance on re-exported tin plate shall be limited to 50 per cent instead of the present allowance of 99 per cent, and by the general demand, leveled against the Standard Oil Co., and intended to prevent that corporation obtaining a drawback on crude oil imports refined and exported. With the proposition advanced by the ways and means committee to discard the countervailing duty plan, as applied to oil imports, and put in a flat ad valorem rate of 25 cents, the suggestion is made that while this may serve to prevent crude oil imports from the New Mexican fields, the refiners would be able to nullify the provision by means of the drawback provision. Thus it is that the Standard Oil Co. comes in as a disturbing element and complicates the question of drawback on tin plate and on crude oil.

Changes Suggested.

A study of the situation convinces those here who are watching the metal schedule that the Steel Corporation and other large concerns will make no insistent demand for radical changes in the metal schedule. In other words, the Payne bill as it will pass the house on Friday will probably be satisfactory in the main to the metal trades. That certainly is the opinion prevailing among members of the ways and means and finance committees. The cut made by the Payne bill on steel rails, amounting to 50 per cent, thus leaving the rate at $3.92 a ton, is not quite satisfactory, and $5 would be preferred by the rail makers. The chances are against this advance. The reason for this is the steady maintenance of the mill price of $28 a ton, and the fact that in 1906, the year adopted by the committee for comparative estimates, the steel rail exports amounted to $9,000,000 worth. It is asserted that all these rails were sold abroad at prices lower than domestic quotations. Although good trade reasons are given for this, the facts tend to operate against what is now asked by the rail men, namely, the $5 rate of duty.

ARTHUR J. DODGE.

READING IRON CO. LETS CONTRACTS FOR NEW MILL.

The Reading Iron Co., Reading, Pa., advises that it has let contracts for the construction of a new mill, which will include three buildings: the furnace department, 90 x 280 feet; the finishing department, 90 x 280 feet, and the shipping department, 90 x 400 feet. The contract for the structural steel and erection has been awarded to the Pennsylvania Steel Co. All the buildings will be provided with crane runways for overhead electric traveling cranes. The remainder of the machinery will be made principally in the company's own shops.

The Cambria Steel Co. had all of its eight blast furnaces in operation on the last day of March.

MASSILLON SHEET MILLS

Are Said to be Among Most Economical in Middle West.

The newly erected plant of the Massillon Rolling Mill Co., Massillon, O., which was formally placed in operation March 23, is one of several new sheet mill projects to be built in the middle west, and, it may be said, it is also one of the most economical sheet mills in that section. The main building is a steel structure, 140 x 320 feet, which houses five sheet mills; two cold mills; two 1,000-horsepower heavy duty Corliss type engines; one 150-horsepower enclosed type Russell engine, 260 revolutions per minute, driving a 100-kilowatt generator; one Alliance 20-ton crane; six annealing furnaces; one Mesta No. 2 pickling machine; a bar shear; square shears from 42 to 126 inches; and a 42-inch roll lathe. The power and gas producer building is of steel construction, 45 x 95 feet, equipped with 800-horsepower Geary tubular boilers, and two Volkommer & Hagan gas producers. The machine shop is a brick structure, 40 x 60 feet, equipped with 24-inch planer; 24-inch lathe; rotary drill press; 8 x 18-inch air compressor and blacksmith forge. The galvanizing and roofing plant is a steel and brick structure, 60 x 312 feet, containing two galvanizing pots of Wilfong type, and a complete equipment of roofing machinery of the latest pattern.

The company will manufacture black and galvanized sheets, deep drawn steel, corrugated, and, in fact a full line of sheet metal goods. The officers of the company are: President, A. B. Clark, who is president of the Canton Art Metal Co., and also treasurer and general manager of the Carnahan Tin Plate & Sheet Co., of Canton; vice president, T. C. Belding, who is also general superintendent of the Canton Art Metal Co., and an authority on sheet metal material; secretary, W. W. Clark, who is also secretary and treasurer of the Canton Art Metal Co.; treasurer, W. A. Eckis; general superintendent, W. H. Davey, who is also general superintendent of the Carnahan company, and a recognized authority on sheet and tin plate. The engineer who constructed the plant is W. A. Foreman, of Pittsburg.

The mills of the Sligo Iron & Steel Co., Connellsville, Pa., have closed down indefinitely for extensive improvements. Two furnaces will be added to the bar mill.

PITTSBURG FOUNDRYMEN'S ASSOCIATION.

Efficiency in plant organization and operation was discussed at the monthly meeting of the Pittsburg Foundrymen's Association at the Fort Pitt hotel, Monday evening, April 5. Harrington Emerson, president of The Emerson Co., New York, addressed the association on "Modern Productive Relations Between Shop Officials and Their Subordinates," and "The Modern Theory of Profit Sharing," and handled the subject with the thoroughness of the specialist. An interesting discussion followed Mr. Emerson's remarks.

A communication from Dr. Moldenke, secretary of the American Foundrymen's Association, was read submitting the proposed increase of dues to a referendum vote. On the motion of W. H. McFadden, it was decided that the officers of the Pittsburg Foundrymen's Association should take up the question with the executive officials of the American Foundrymen's Association and obtain a clear understanding of the status of the former association with respect to the proposed increase before a vote should be taken. Secretary Zimmers presented a number of letters from foundry appliance manufacturers, favoring the establishment of the proposed permanent exhibit at the Carnegie Technical schools in Pittsburg. The association deferred final action upon the question of maintaining an exhibit until after its committee had conferred further with equipment manufacturers at the coming convention of the American Foundrymen's Association at Cincinnati.

The Pittsburg association added its voice in urging speedy tariff legislation by adopting resolutions asking the congressional representatives from the Pittsburg district to expedite in every possible manner an early conclusion of matters relating to tariff legislation.

Will Build Tin Plate Mill.—W. G. Brangham, formerly superintendent of the Chester, W. Va., plant of the American Sheet & Tin Plate Co., and associates, are planning the erection of an independent tin plate mill at Holiday's Cove, Hancock county, W. Va. Figures on the equipment, consisting of eight tin mills, are now being taken. Mr. Brangham recently resigned from the employ of the American Sheet & Tin Plate Co., and has been succeeded at the Chester plant by George D. Evans, of Sharon, Pa.

PERSONALS.

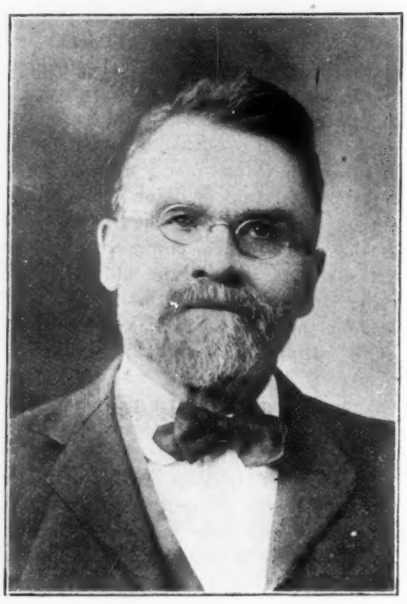
August Heckscher was a passenger on the Kaiser Wilhelm II, sailing Tuesday.

J. E. Johnson Jr. has resigned his position as manager of the Princess furnace at Glen Wilton, Va.

P. E. Montanus, Springfield, O., secretary of the Machine Tool Builders' Association, has returned from an extended European trip.

Henry F. Gilg, formerly with the Refined Iron & Steel Co., Pittsburg, has become manager of sales of the Sligo Iron & Steel Co., Connellsville, Pa.

W. A. Maguire, formerly of Decamp Bros. & Yule, of St. Louis,



MATHEW MORTON.

President of Morton Mfg. Co., Muskegon Heights, Mich., whose death was noted in last week's issue of THE IRON TRADE REVIEW.

will, effective at once, represent the Domhoff & Joyce Co., in St. Louis and western territory.

O. S. Decker has resigned as sales manager of the Sligo Iron & Steel Co., Connellsville, Pa., and has opened a general iron and steel brokerage business in the House building, Pittsburg, under the name of O. S. Decker & Co.

A. R. Young, C. E., has resigned his position as western agent of the Fort Pitt Bridge Works, Pittsburg, to become a member of the firm of W. R. Carter & Co., engineers and contractors, Lawrence, Kans. From April 1, H. C. Breidert, C. E., of the Pittsburg office, has assumed charge as western agent of the company, with offices at 818 Fisher building, Chicago.

S. A. Kennedy, president, and C. D. Tripp, general manager, of the Rogers-Brown Ore Co., have been elected to the board of directors of the Cuyuna Iron Range Railway Co., whose line is now being built from the Cuyuna range to connect with the Soo line for hauling ore to Duluth.

Pentecost Mitchell has been chosen vice president of the Oliver Iron Mining Co., and J. H. McLean, general manager. It is understood that these will complete the changes attendant upon the resignation of Mr. Cole as president. For the present the position of assistant manager, formerly held by Mr. McLean, will not be filled.

Several official changes in the selling force of the Republic Iron & Steel Co. have been brought about by the resignation of D. M. Forker, assistant general manager of sales, with headquarters at Pittsburg, who withdraws from active connection with the company on account of continued ill health. C. T. Johnston, at present manager of sales at Cleveland, will succeed Mr. Forker as assistant general manager of sales at Pittsburg, and D. S. Guthrie, at present manager of sales at Birmingham, Ala., will become manager of sales at Cleveland. E. M. Barnes, who has been traveling representative of the company in Chicago territory, assumed the management of sales at Birmingham, April 5. The other changes are effective April 1, but the transfers have been deferred a few days.

OBITUARIES.

Justin Parmelee, for 25 years superintendent of the L. Wolff Mfg. Co., Chicago, died April 4 at the age of 74. At the time of his death which was caused by heart trouble he was president of the Parmelee Wrench Co. A widow and two children survive him.

Jasper R. Rand, vice president and director of the Ingersoll-Rand Co., died of pneumonia in Salt Lake City, March 30. He was the son of Jasper Raymond Rand, one of the founders of the Rand Drill Co., and was born Sept. 3, 1874, in Montclair, N. J. Graduated from Cornell University in 1893 with the degree of mechanical engineer, he served during the Spanish-American war in Porto Rico as a member of the First New York Volunteer Engineers. He was president of the Imperial Engine Co., of Painted Post, N. Y., for one year, and in 1900, became president of the Rand Drill Co., which office he held until 1905, when he was elected vice president and director of the Ingersoll-Rand Co.

AMONG MACHINERY MAKERS.

MILWAUKEE.

Improvement in Business More Noticeable than Since the Panic.

Milwaukee, Wis., Apl. 6.—Milwaukee machinery manufacturers say that there is an upward tendency in business not evidenced since the financial depression. Previous to the national election, there was a lull in the general trade conditions and after the election came the tariff revision question, and improvement took place slowly. Now, with the end of tariff revision in sight, the waiting attitude is being dispelled and an awakening to business activity is surely taking place. That business is improving seems clearly brought out by the number of plans now under way for the enlargement of various manufacturing plants in the city, increases in working forces at various establishments, and renewed and larger orders for manufactured products, together with constantly increasing calls for cars for handling shipments. Manufacturers say that all of these things tend toward the normal conditions which prevailed prior to the financial slump. One of the most significant signs of substantial improvement is the fact that practically all of the plants engaged in the manufacture of producing machinery are looking for additional help, while many of them are forced to arrange for large additions to their establishment at once.

The Crucible Steel Casting Co., 612 Clinton street, Milwaukee, has begun the erection of a new $3,500 office building. The structure will be two stories, 22 x 36 feet, and will be strictly modern in every respect.

One of the largest and most valuable trains of engines and separators ever sent out by the J. I. Case Threshing Machine Co. of Racine, Wis., left the plant this week. There were 40 engines and 50 separators, the train was one-quarter of a mile long and the value of the entire shipment was placed at $100,000. The train went direct to Wichita, Kas., where it is exhibited at the threshermen's convention.

The Allis-Chalmers Co., West Allis, is constructing a model engine to be exhibited at the Alaska-Yukon exposition at Seattle. The engine will be one-quarter size of a 1,000-kilowatt steam turbine and will be 40 inches long.

The $250,000 steel bridge over the Rock river near Beloit, Wis., has been completed by the Chicago, Milwaukee & St. Paul Railway. The structure consists of six spans, is 360 feet long and is one of the finest steel bridges in southern Wisconsin.

The Meyer Bros. gas engine works at West Bend, Wis., will soon be installed in new quarters in the Krieger building.

The Gilson Mfg. Co., at Port Washington, Wis., will erect an addition of 200 feet to its main building and will also add a new testing room.

Walter E. Meyer, for several years inspector of steam turbines and gas engines at the West Allis, Wis., plant of the Allis-Chalmers Co., has resigned to take charge of the plant of the Heisler Engine Co. at St. Marys, O.

The Federal Metal Weather Strip Co. has been incorporated to be located at Milwaukee. Capital stock is given at $15,000 and the incorporators are Charles A. Blohm, C. H. Chamberlin and Charles H. Boden.

With a view of a further extension of its plant sometime in the future, the Power & Mining Machinery Co. at Cudahy, Wis., a suburb of Milwaukee, has purchased eight acres adjoining its establishment.

Officials of the J. I. Case Threshing Machine Co. of Racine, Wis., will be at Washington, D. C., this week to protest against the high duty now imposed by the United States on its products. The manufacturers say that the duty is acting to their disadvantage in the foreign market and that the duty on threshing machines and engines imposed by the United States tariff laws is much higher than that exacted by Canada.

Several iron and metal companies of Wisconsin are using their efforts to have the duty on scrap iron retained. M. L. Fox, manager of the Racine Iron & Metal Co., has written to Congressman Cooper in behalf of many manufacturers, announcing that the proposed reduction from $4 to 50 cents per ton will kill the scrap iron business.

CINCINNATI.

Business is Still Very Irregular—Believed Worst Has Passed.

Office of THE IRON TRADE REVIEW,
First Nat'l Bank Bldg., April 6.

The past week has developed no particular change in the demand for machinery and machine tools. Business continues of the same character as in the recent past, irregular and with but little to indicate what may be expected. The shops are receiving some orders right along, which are more or less unevenly distributed. It is almost the universal experience that orders may come in fairly well for a week and then drop off for a like period or they may run well for several days and be succeeded by dullness. It is difficult to gage the situation or observe a change in conditions from week to week, but it is encouraging to note that March business was undoubtedly better than February and this leads the manufacturer to hope that April may show an increase over March. Some good inquiries are in hand, but under the present conditions of close shopping with ample time for thorough investigation and quick deliveries promised on nearly all machine tools, there is considerable distance between inquiries and orders. In addition to this, the purchasers are more or less halting in their determinations to place the orders. There is, nevertheless, a noticeable feeling that the worst period of the depression has passed and that, while recovery may be slow, the business is gradually improving.

Considerable interest is manifested in the annual convention of the N. M. T. A., which will be held in New York on April 12. About 30 of the local machine tool builders will attend the convention and have arranged for a special car. They will stop off at Syracuse, N. Y., for a day at the invitation of the Syracuse manufacturers to visit the industries there.

The Barriet Electric Mfg. Co. will be sold this week under sealed bids by order of the court.

Preparations for the entertainment of the members of the various associations, associated with the foundry trades, which will hold their annual convention in Cincinnati beginning May 17, are being actively prosecuted. The various sub-committees of the local committee are reporting excellent progress on the entertainment program. The exhibit of foundry supplies in Music hall promises to be more elaborate than ever before.

The General Electric Co., now in the Perrin building, has leased the entire tenth floor and 1,000 square feet of the ninth floor of the new Provident Savings Bank & Trust Co.'s building at the corner of Seventh and Vine streets, which will be ready for occupancy about Aug. 1. The General Electric Co.'s lease is for five years, commencing Dec. 1.

NEW YORK.

Machine Tool Builders Will Meet in Milwaukee—Trade Shows Little Change.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., April 6.

President F. L. Eberhardt, of the National Machine Tool Builders' Association, announces that the spring meeting of that organization will be held May 25 and 26 at Milwaukee, Wis. Headquarters will be held at the Plankington hotel. This is the first time that the association has gone westward for a meeting place in some years, as the constitution provides for the holding of the annual meeting in New York, and the spring gathering has usually been held at some Atlantic resort. Further details of the program for the Milwaukee meeting have not yet been arranged, as Secretary Montanus returned only a few days ago from an extended European visit.

Locally the machine tool trade presents about the same situation as has prevailed for some time past. There is small buying of scattered tools, with a fair volume of second hand business, but no important lots are being closed, and inquiries are by no means extensive. No reports of wage reductions have been heard in the machine tool manufacturing trade, but these are by no means considered unlikely in the face of the general readjustments in other and allied manufacturing lines. There has been some wage reduction during the past week by bolt and nut manufacturers.

It is understood that buying has about been completed for the $2,000,000 power plant of the Metropolitan Electric Co., at Reading, Pa., under construction by the Interstate Engineering & Supply Co., Philadelphia. The Edge Moor Iron Co., Edge Moor, Del., will furnish the boiler equipment, the Allis-Chalmers Co., secured a very large contract for electrical work, the General Electric Co. will supply the turbines, and the chimney contract has been taken by the Alphons Custodis Chimney Construction Co., New York city. Walter J. Jones, 60 Wall street, New York, is consulting engineer for the work.

The machinery trade is following the progress being made by the Syracuse Safe Co., Syracuse, N. Y., on plans for the new plant which it is to erect some time this year. It will be located in the eastern part of the city.

The Youngstown Car Mfg. Co., through its New York office, has taken an order for shipment to the east calling for an assortment of cars and track equipment. Included in the order are five rotary dump cars, nine double side dumps without brakes, six double side dumps with brakes, two flats and about 5,000 feet of portable track with switches, etc. The cars are all of steel construction.

The Parker Boiler Co., through its New York sales office, has taken an order for supplying the Astoria Veneer Co., Astoria, L. I., with 300-horsepower additional boiler capacity.

Two attractive crane orders have recently been taken by Manning, Maxwell & Moore, 85-89 Liberty street. One of these is a Shaw crane of 50-ton capacity, 34-ft. span, for the new capitol power house at Washington. The order is an 80-ton Shaw with a span of 35 ft. 7 in., and a lift of 52 ft., for the Metropolitan power house at Reading, Pa. This is a standard crane, electrically controlled and equipped for operation on 500-volt direct current. It is also fitted with a 10-ton auxiliary hoist for light service.

Several important building operations have developed in the Philadelphia district. The Link Belt Co. has taken out a permit for the erection of a steel and concrete coal pocket, 46 x 104 ft., for the Reading railroad; it will have a capacity of 2,000 tons and will cost $85,000. The American Pulley Co., Twenty-ninth and Juniata streets, Philadelphia, is to put up a one-story factory, 50 x 100 ft. The Neidich Process Co., Burlington, N. J., is to build a small three-story factory.

PITTSBURG.

Fair Business Developing, But Feeling is not Very Optimistic.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., April 6.

There is a fair run of business coming to machinery makers, but the market is not displaying consistent buying power which lends itself to optimistic anticipation or justifies the operation of more than limited capacities. So many of the plants in the Pittsburg district are dependent upon prosperous steel works operations that the present uncertain condition of that industry is seriously affecting the activities of these companies. The leading mill machinery makers in this district are now running their plants at an average of from one-third to one-half of normal capacity. It is not believed that the announcement of the tariff schedules has had much effect upon machinery buying, since the proposed reduction of such duties from 35 to 40 per cent ad valorem is not expected to make foreign competition a much greater problem for domestic builders in this territory. Some engine makers are booking an encouraging number of orders.

The United States government, through its local engineer's office, is letting some contracts for machinery in connection with lock improvements in the Monongahela river. Recent contracts placed include gate operating machinery, valves, two sets of air compressors and other equipment for lock No. 5. It is expected that additional contracts will be placed for lock No. 1 as soon as appropriations for river improvements have been made.

The Berger Mfg. Co., Canton, O., has awarded the Mesta Machine Co., Pittsburg, a contract for reconstructing a 38 x 60-inch simple Corliss steam engine for its sheet plant. Recently the company had an accident and the guide of the engine was broken. The Mesta company is now engaged in building a new guide, crank shaft, crank disk, pillow blocks, eccentrics, main bearing fillings, and in reboring and filling old fly-wheel hub and gear.

The H. C. Frick Coke Co. is preparing to build a number of additional mine cars at its Everson, Pa., shops.

The machinery of the Sharon Water Works Co., Sharon, Pa., consisting of pumps, engines and other equipment has been purchased by Carnick Bros. & Speer, Sharon. The company recently installed a new filtration plant and is disposing of its useless machinery.

The McInnes Steel Co., Corry, Pa., has completed the installation of a new 10-inch mill and now has it in operation for the manufacture of high-speed tool steel.

The Franklin Machine Co., Franklin, Pa., successor to the Coffman Machine Co., has built a new steel and concrete addition in which it has installed complete equipment for the building of three types of vertical and horizontal boring mills.

A new addition to the plant of the Oil City Boiler Co., Oil City, Pa., is rapidly nearing completion and is expected to be ready for operation about May 1.

The McCrosky Reamer Co., Meadville, Pa., reports a marked improvement in the demand for its patent drill chuck.

The G. M. Yost Co., Meadville, Pa., is about to place on the market

a full line of iron and steel-working vises in addition to its present products in the way of wood-working tools.

The Erie City Boiler Works, Erie, Pa., has just completed the first of its new type of water tube boilers and will make extensive tests at its own plant before placing this line upon the market.

The Thomas Coupling Co., Warren, Pa., has applied for a Pennsylvania charter, and within a short time will begin the erection of a plant for manufacturing shaft couplings for power transmission in sizes up to 6 inches.

The Nagle Corliss Engine Co., Erie, Pa., notes that inquiries for its Corliss type of engine have considerably increased during the past several weeks.

The Riverside Engine Co., Oil City, Pa., is running full time and has sufficient contracts on its books to engage its capacity for some time to come.

The Struthers-Wells Co., Warren, Pa., reports it is meeting with gratifying success in the marketing of its gas engines for high speed electrical work.

The American Roll & Foundry Co., Canton, O., has taken the contract for building the six sheet and six tin plate mills to be installed in the new works of the DeForest Sheet & Tin Plate Co., to be erected at Niles, Ohio.

PIPE WORKS ASK DEEP CHANNEL.

In a letter to the commissioner of navigation at Philadelphia, arguing for a 35-foot channel for the Delaware River, R. D. Wood & Co., of that city, make the following statement:

Dear Sirs—We beg to invite your attention to the following transaction, which occurred in Philadelphia this month:

We were figuring on 50,000 tons of cast iron pipe, to be shipped to San Francisco, and in order to make satisfactory figures to compete with Scotland, who can ship at a very much lower figure than can be obtained from the seaboard territory, we endeavored to negotiate for the S. S. Minnesota. After working on the matter assiduously they declined to consider loading in Philadelphia, on account of there being insufficient water.

There is no doubt that all merchants are aware of the necessity and advisability of having a 35-foot channel in the Delaware River, to Philadelphia, to place us on an equal basis with shipping ports in the United States, such as Boston, New York and Baltimore.

GETTING TOGETHER

To Settle a Controversy of Long Standing—Canadian News.

Toronto, Can., April 5.—The negotiations which have been in progress for some time looking to an amicable settlement of the dispute between the Dominion Iron & Steel Co. and the Dominion Coal Co., were brought to a successful conclusion on March 30, when the Coal company paid over $2,750,000 to the Steel company on account of the latter's claim for damages under the recent decision of the imperial privy council. Agreements were also signed for the revival of the old contract and a continuance of the supply of coal to the Steel company, and providing that the Steel company shall furnish a full statement of the details of its claims for losses by reason of short deliveries, loss of orders, etc., and submit its books, documents, etc., for examination by the Coal company, on the completion of which the parties shall endeavor to arrive at an amicable settlement before a final assessment of damages by the referee.

There is an enormous demand in the Canadian west for agricultural machinery and implements of all kinds, and Winnipeg dealers are having much difficulty in filling orders. The output of Ontario manufacturers has been largely sold ahead, and having underestimated the demand, some firms are now being overwhelmed with orders that they cannot fill. The conservative policy pursued during the depression has left most establishments with little stock on hand, so that it will take some time to relieve the situation.

The annual meeting of the Canadian General Electric Co., Ltd., was held in Toronto on March 29. The report of the directors for 1908 was of a highly encouraging character, showing profits amounting to $753,088, leaving $510,367 after deducting allowance for depreciation and interest. Of this amount $439,042 was paid in dividends and $71,325 carried to the credit side of the profit and loss account. The report stated that, notwithstanding the industrial depression, the company had secured several important contracts which added to current business would keep it fairly busy during the year. During the last three months, more orders had been secured than during the previous six months, and indications pointed to a material improvement in trade conditions.

The report presented to the annual meeting of the Canadian Westinghouse Co., at Hamilton, Ont., on March 30, showed net profits for 1908 to the amount of $320,377. Dividends were paid amounting to $249,937, $30,000 was added to the reserve and the balance carried forward to profit.

The Canadian government has accepted the tender of Haney, Quinlan & Robertson for the construction of the National Trans-continental (Grand Trunk Pacific) terminal shops at St. Boniface, a suburb of Winnipeg. The amount of the tender is about $869,000.

The plant and business of the Norton Mfg. Co., Hamilton, Ont., have been sold to the American Can Co., of New Jersey, Kenneth Bethune having taken charge of the property as superintendent.

INDIANA ACTIVITIES.

City Hall Case—New Plants and Additions.

Indianapolis Ind., April 5.—The delay in rendering a decision in the city hall case, in which it was sought to enjoin the city from letting the contract on the plans selected, has given rise to a general impression that the case will be decided against the city. If such a decision is given, new plans will have to be ordered, or the present ones modified, which will require a delay of several weeks and necessitate new bids.

Rubush & Hunter, archs., are preparing plans for a nine-story business block, which will be erected on the site of the old Masonic Temple, Washington street and Capitol avenue. R. Kirshbaum is the owner and the building, which will cost $200,000, will be used for a furniture store.

The old plant of the National Machine Co., which has been idle at Columbus for several years, is to be re-opened. It has been leased by Charles Caldwell and Charles Rhorer, who will manufacture rotary engines and a patent window sash. A foundry will also be built.

Unless the Commercial Club does something shortly, this city will probably lose the plants of the Overland Automobile Co., Marion Motor Car Co., and American Motor Car Co. All these companies have found that larger plants are an absolute necessity. The Overland Automobile Co. has plans for a plant that will employ 2,000 people and this will be erected as soon as a new site can be agreed upon.

The United States Machine Co., of Detroit, manufacturing cold storage and artificial ice plants, has decided to move to Angola, where the Commercial Club has sold $60,000 worth of 7 per cent preferred stock of the concern. About 100 people will be employed and a factory with 18,000 square feet of space will be erected, to be ready for operation about May 1.

John L. Ketcham, of the Brown-Ketcham Iron Works, spoke at a banquet of the Indianapolis Lumbermen's Club on March 31, declaring that he was a firm believer in agreements for uniform prices. "Get together and agree on a fair price and a fair wage," he said. "Fix prices on a reasonable basis and quit cutting each other's throats."

TECHNICAL SCHOOLS

Throughout the United States Declared a National Necessity.

Benjamin W. Johnson, director of manual training in the Seattle, Wash., public schools stated in a recent address that unless the United States awakens at once to the need of filling the ranks of the skilled trades through its public schools, Germany will capture the American foreign markets. Mr. Johnson has recently returned from an extended trip abroad and was much impressed by what he observed in German industrial circles.

"Germany," said Mr. Johnson, "is capturing the markets of the world by reason of her superior educational system. From 1900 to 1905 our sales to Germany of tools and machinery fell off one-third, while Germany's sales of these commodities to us were doubled. In the same period Germany doubled her sales of tools and machinery to England, while England's sales decreased two-thirds. To Sweden, Denmark, Argentina and Chile Germany sold twice as much as in 1900, to China five times as much, to Canada four times and to Portugal three times the amounts of five years ago. The lack of really skilled labor in this country is responsible for this. We no longer keep up the supply from Europe. Our industries are so specialized that apprenticeship is scarcely possible. We have no schools to take its place."

Mr. Johnson submitted a diagram, prepared by a leading manufacturer from data secured from his own employes, which showed that an unskilled mechanic starting at $3 a week at 16 years of age advanced to $10 a week at 22 years and did not advance above this; the self-trained mechanic reached a maximum of $16 a week at 24 years of age; the trade school mechanic, entering the shop at 19, advanced rapidly from $12 a week to a maximum of $22 a week at 25 years, with gradual progression after that time. The technical school trained man enters the shop at about 22 years and advances from $12 a week to $32 at 27 years, after which the advance is more gradual, reaching $42 a week at the age of 32.

Mr. Johnson said that the aim should be to have a suitable school or course of instruction adapted to the various needs of all pupils, so that at whatever point a pupil has to withdraw from the ordinary schools, there will be found an institution ready to give him direct, specialized training for his life work.

MAKING IRON IN THE OLD DAYS.

Editor THE IRON TRADE REVIEW:

Sir: The recent failure of the "Gentlemen's Agreement" reminds me of a similar occurrence, of which Thomas W. Means, who fired the first furnace in the "Hanging Rock" Iron Region in 1826, used to speak. Along about 1840, when this region was an important factor in the iron business, and the business was in a very satisfactory condition, a meeting of the furnace owners was called. The only means of travel at that time was on horse back. When the iron men came together and discussed the situation, the conclusion was reached unanimously that too much pig iron was being manufactured. As all iron then was made with charcoal, and if the wood necessary to make the iron was not cut in the winter and early spring, it could not be cut at all with economy, they determined that the proper thing to do was to curtail the wood chopping. They all agreed to cut only half of the usual amount of wood. Then Mr. Means said they all got onto their horses and rode home, and every gentleman let out just double the usual amount of wood. After the wood was chopped in order to prevent it from going to waste, it was necessary to make it into charcoal, and then to avoid the risk of fire, it was necessary to make it into iron.

There is one feature of the iron and steel business that does not seem to attract much consideration; that is that there is a large proportion of the independent iron and steel workers and manufacturers whose bread and butter and that of their families depends on their making and selling their product. These men are not working for dividends, as are the large corporations, but most likely are working for something to eat, and cannot observe a "gentleman's agreement." These men cannot be expected to stand idle and let those dependent upon them go hungry. Hence such men, in times of depression and slack demand, are always seeking to get possession of bankrupt or idle furnaces and mills and start them by some hook or crook just to get jobs. After they are started, the product must be sold at any price that can be obtained.

After the election in the fall of 1860, David Sinton, who was then a principal owner in one of the best furnaces of this region, came from his home in Cincinnati, as was his custom every year, to mark out the plan for next year's work. He was in conference with the furnace manager, determining where coaling jobs should be located and how much wood should be cut. At that time, many considered war very probable, and many men hesitated to lay plans for the next season's work. Sinton and Means doubted the wisdom of cutting any wood for the blast of the next season. While the conference was going on, Mr. Smith, an old collier, came to the office and said: "Mr. Sinton, I want a coaling job for next year." Mr. Sinton replied: "Well, Mr. Smith, we have not decided to cut any wood or make any iron next year. There is such a strong probability of war and the business of the country is so disorganized, that we think it would not be prudent to make any preparations for making iron next season." Mr. Smith said: "Mr. Sinton, I want a coaling job for next year. I expect to live next year." He got the coaling job.

AN OLD TIMER.

Ironton, O., March 9, 1909.

WILL MAKE MERCHANT IRON.

At a time when the furnaces which have been regularly supplying the trade in the Chicago market are considering blowing out because of the market weakness and the lack of orders, it is interesting to note that the Bayview furnaces of the Illinois Steel Co. will be hereafter merchant stacks. One stack is now in blast and sales have been made of this iron for the past 60 or 90 days. In the week before last, orders for 12,000 tons were taken. In the past, the output of these stacks has been diverted to other plants of the Illinois Steel Co., where it could be converted into steel and used. The blowing in of the Gary furnaces and the improvements at South Works and Joliet will provide sufficient iron for all of these plants without Bayview. Inasmuch as the Bayview works has no steel making plant and is equipped only to roll bars from billets, it has been decided to turn the stacks to merchant iron.

Contracts for Ore Handling Equipment.—The Brown Hoisting Machinery Co., Cleveland, reports having secured a contract to furnish for the Stewart Iron Co., Sharon, Pa., ore bins, furnace hoist, a larry car and two cranes. The tonnage involved is about 600. The same company also reports orders for a considerable number of locomotive cranes. The shop is operating at a fair percentage of capacity, having about 600 men at work.

The Dominion Coal Co., Ltd., operating coal mines on Cape Breton Island, Canada, reported that its net receipts for the year ending Dec. 31, 1908, were $2,686,202, an increase of $591,663. After dividends of 7 per cent on preferred and 4 per cent on common stock were paid a net surplus for the year of $1,600,162 remained.

PRODUCER GAS FIRED FURNACES IN THE IRON AND STEEL INDUSTRIES—I

By Oskar Nagle.

The author has collected here illustrations of a great many types of furnaces in common use in the iron and steel industries, which are fired with producer gas. It is thought that a collection of authentic drawings of furnaces which are actually installed in iron and steel works will prove of value for purposes of reference and for showing just what has been accomplished in this line of work.

In Figs. 1 and 2 is shown a simple puddling furnace designed by Anton Mueller in Klagenfurt, Austria. The producer is contained in the furnace proper. An inclined plane *ll* provided with perforations, is shown in Fig. 3, being used in place of a grate. The use of a grate of this character allows the gasification of almost dusty peat. The lower blast passes from the main *c* through four tuyeres *nn* into the wind box *o*. Fuel is charged through a door *a*. The upper blast is discharged from a blower through a heating box into the pipe *d* and thence through seven tuyeres *pp* to the hearth. The temperature of the blast is about 100 degrees Cent. In a later construction of this furnace the blast is heated to about 200 degrees Cent., by means of tubes arranged in a boiler furnace. At one side of the furnace is a slit *bb* for removing ashes and slag. This is closed by the door *mm*. The lower and upper blasts are regulated by the valves *g* and *h* in Fig. 2, which also shows the working door *k*.

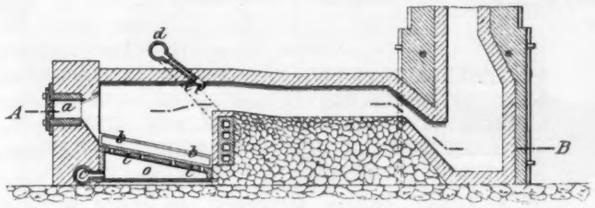
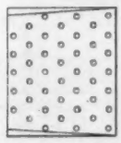


Fig 1.



Detail of Grate

Fig 3.

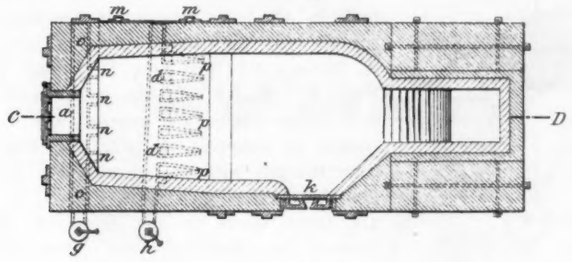


Fig 2.

Puddling Furnace Designed by Anton Mueller.

A puddling furnace of ordinary construction is shown in Figs. 4, 5 and 6.

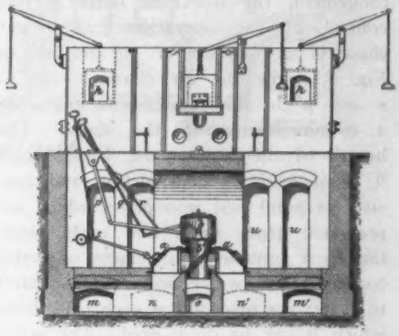


Fig 7

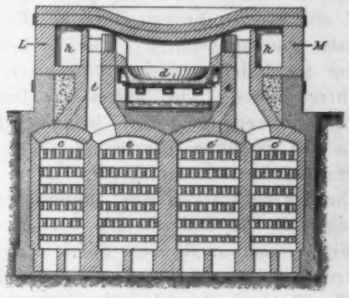


Fig 8

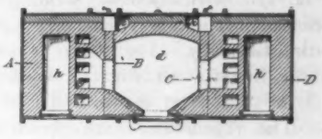


Fig 9

Regenerative Puddling Furnace.

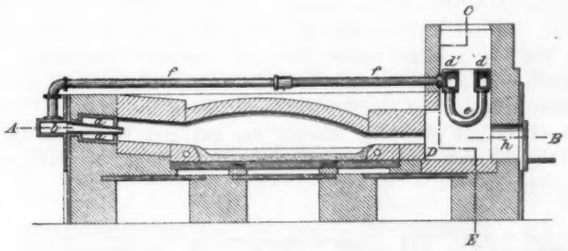


Fig 4.

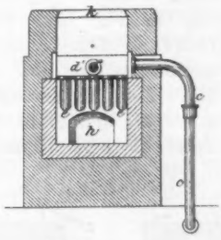


Fig 6.

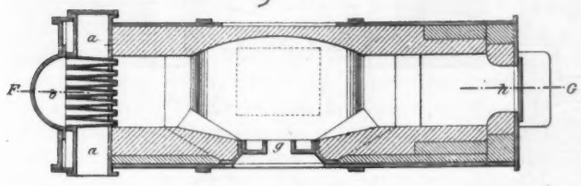


Fig 5.

An Ordinary Puddling Furnace.

Fig. 4 is a section on the line *FG* of Fig. 5. Fig. 5 is a section on the line *AB* of Fig. 4 and Fig. 6 is a section on the line *CDE* of Fig. 4. In this furnace the gas enters the wind box *aa*, to which is attached the reservoir *b* for the upper blast, which is heated in the heater *ee* built into the stack. The heater comprises two square boxes *dd'*, which communicate with each other through five elbows *ee*. The cold blast enters *d* through the pipe *cc*, and from

d' the hot blast passes through *ff* to *b*. The pig iron is preheated in the arched doorway *h*. A working door is shown at *g*, Fig. 5.

A regenerative puddling furnace is shown in Fig. 7, which is a front view with a subterranean section. Fig. 8 is a cross section of the furnace on the line *ABCD* of Fig. 9, which is a plan section on the line *LM*, Fig. 8. The gas enters through the valve *b* into the reversing valve *b'*. At *q* is a regulating lever for the valve *b*. The air reversing valve is directly behind *b'* and the respective valves are regulated by the levers *p* and *r*. The lever *s* regulates the draft, and, by this arrangement, the workman is in perfect control of the operations. The gas channels are shown at *m* and *m'* in Fig. 7, while the air channels are at *n* and *n'* in the same view, and *o* is a communication to the stack. The hearth of the furnace *dd*, Figs. 8 and 9, is of ordinary construction and consists of solid cast iron plates which are protected from rapid and early burning by a suitable arrangement of water cooling. The water flows from coolers to reservoirs provided at each side, from which it can be discharged. The water vapors preserve the plates of the hearth. They enter the pipes *ii*, Fig. 7 and escape through flues *kk*, Fig. 9, into the atmosphere. The preheaters for the billets are shown at *hh* in all three views. The billets are heated here to redness before being charged to the puddling hearth *dd*. The air channels are shown at *fff*, Fig. 9, and the gas channels at *gg*. Cleaning openings for the valve boxes are at *aaa*, Fig. 7, and at *tt'*, Fig. 8, are channels from and to the regenerators, *uu* in Fig. 7 being the "doors" to the latter.

In Figs. 10 and 11 is shown one-half of a symmetrically-built welding furnace installed at the Vulcan Works near Settin, Germany. Fig. 10 is a section on the line *CD* of Fig. 11, while Fig. 11 is a section on the line *AB* of Fig. 10. The regenerators are shown at *e* and *e'*, *e* being the air regenerator and *e'* the gas regenerator. The hearth is

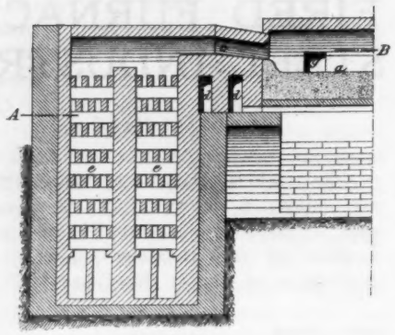


Fig. 10

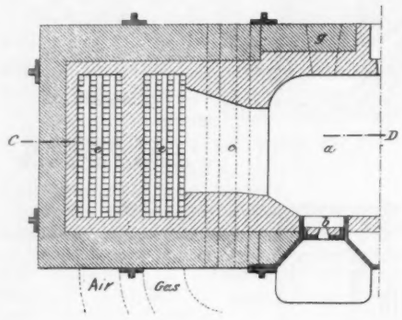


Fig. 11.

WELDING FURNACE AT VULCAN IRON WORKS.

at *a* and the flue at *c*. The working doors are two in number, one being shown at *b*. The charge is gradually moved from the cooler to the hotter parts of the hearth. Opposite the doors *b* are provided openings *g* in the back wall for the purpose of making possible the welding of long shafts. At *dd*, Fig. 10, are air channels for cooling the flues.

The Siemens regenerative puddling furnaces were somewhat modified by Bonehill. This modified arangement is shown in Figs. 12, 13 and 14, Fig. 12 being a section on the line *MNOP* of Fig. 14, Fig. 13 a section on the line *HJKL* of Fig. 12, and Fig. 14 a plan section on the line, *ABCDEFGRS of* Fig. 12. This arrangement consists of a furnace *a*, Fig. 14, two twin gas producers, *b*, Figs. 12 and 14, and two regenerators *c*, Figs. 12 and 13. The gases go through the valve *d*, Fig. 13, to the reservoir *e*, the two spaces of each group being connected by a channel *f*, Fig. 12. Each reservoir contains a valve *g*, Figs. 12 and 13. The two valves *g* are alternately opened and closed, so that the gases alternately enter one of the two combustion chambers *hh*, Fig. 12, provided at the ends of the furnace. A double lever *i* connects the valves *gg* and insures their alternate action. Two channels *ll*, Fig. 12, from the regenerators *cc* enter these two combustion chambers. The regenerators *cc* are connected by the channel *m* Fig. 14, and can be put in communication by means of a valve *n* either with the air channels provided under the furnace or the stack. The valves *d* can be opened and closed independently of one another.

E. & P. Martin in Sireul were the first to use the regenerative puddling furnace for the manufacture of steel. A furnace of this type is shown in Figs. 15, 16 and 17. In its construction hearth plates and regenerators are cooled by channels *ss*, Fig. 16, which communicate with the atmosphere and end in slits *r*, Fig. 17. In Fig. 17, *nnn* are three doors in the front of the furnace for charging heavy pieces and also for the purpose of repairing the hearth. In the same figure *ooo* are also used for charging. Cast iron hoppers *aa*, Figs. 15 and 16, are surrounded by heavy clay pipes *qq*, the latter through pipes *kk* being placed in communication with the furnace, in order to effect a circulation of heat. The flame can also play in the space between *aa* and *qq*, thereby heating the iron contined in *aa* to redness. From the gas mains a wrought iron pipe branching at *c*, Figs. 15 and 16, to the right and left, and reaching nearly to the bottom of the hoppers, carries the reducing gas to the metal. In order to make this gas current continuous a steam jet is employed at the point where the gas leaves the main *g*, Fig. 16, whence the gas and steam together enter a small condenser *p*, Fig. 15,

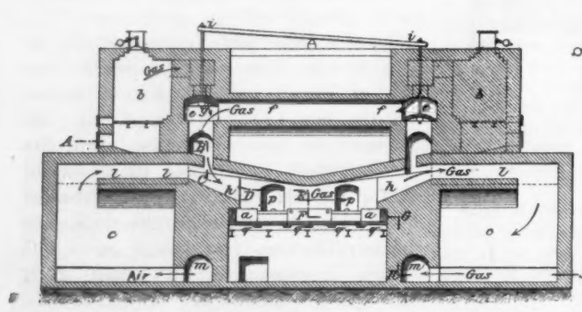


Fig. 12.

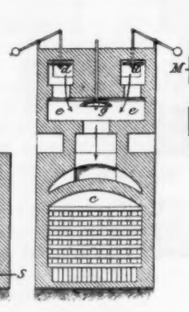


Fig. 13

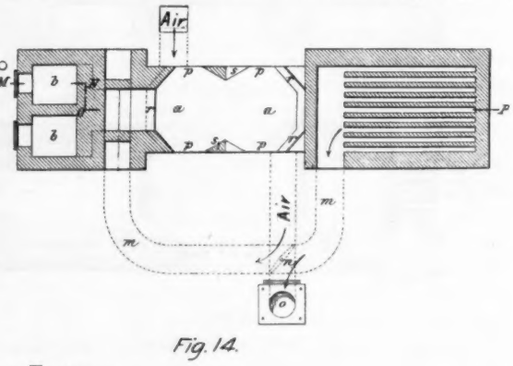


Fig. 14.

MODIFIED SIEMENS REGENERATIVE FURNACE.

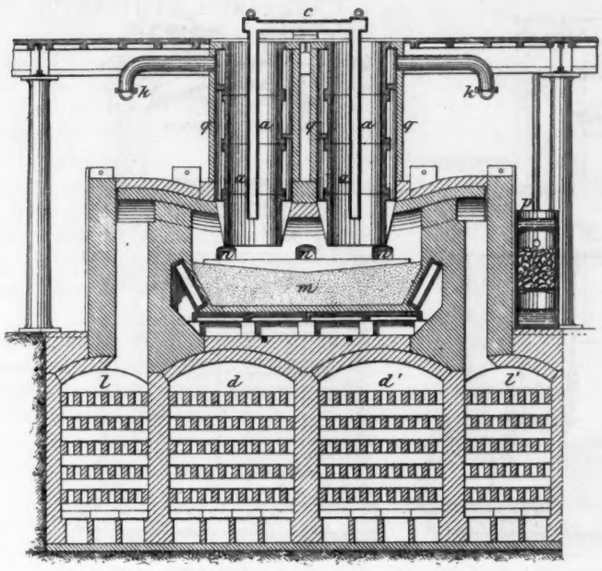


Fig. 15.

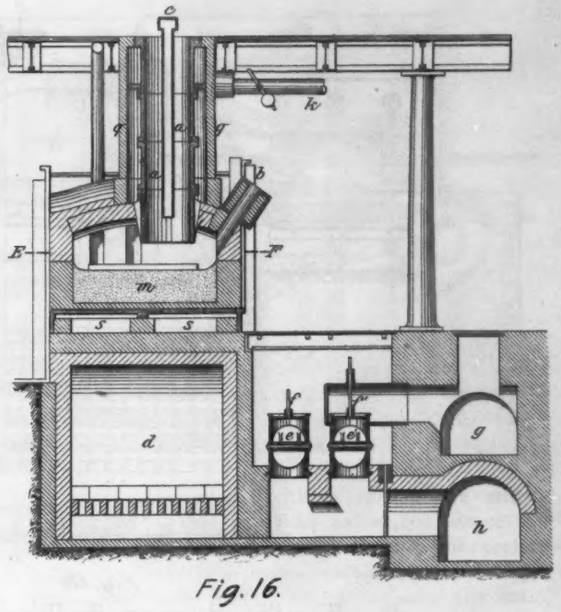


Fig. 16.

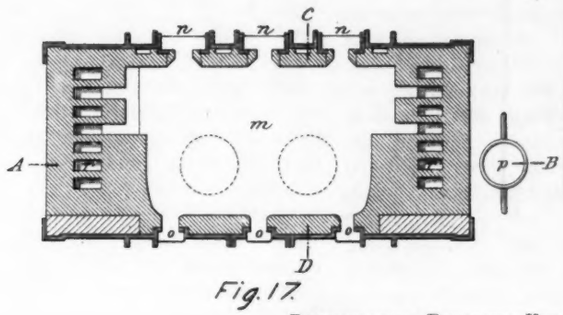


Fig. 17.

REGENERATIVE PUDDLING FURNACE FOR STEEL MANUFACTURE.

which is filled with water and coke, whereby the steam is condensed and the gas purified. The gas reversing valve is shown at *e* and the air reversing valve at *e'*, Fig. 16. The channel *h*, Fig. 16, leads to the chimney. In Fig. 15, *l* and *l'* are the gas generators and *d* and *d'* the air regenerators.

The "chemical" Siemens steel furnace is shown in Figs. 18 to 22. The gas from the producer *B* goes directly to the hearth *E*, Fig. 18. Instead of air, a portion of the products of combustion in a highly heated state is used in the producer for gasification, in accordance with the equation $C + CO_2 = 2\ CO$. The regenerators for the air are at *AA'*, Figs. 18 and 19. At *FF'*, Figs. 18 and 19, are the coal hoppers, *N* and *N'* being the grates. The gas passes from the producer through channels *cc'*, its flow being regulated by the valves *DD'*, Fig. 21. These are so arranged that by opening one the other is closed, the gas being led to the hearth through the openings *GG'*, Figs. 18 and 21. The air for combustion enters at *HH*, Figs. 18 and 20, communicating through the channels *KK*, Fig. 18, with the regenerator *AA'*. Steam jet blowers built into the openings *LL* are shown at *I*, Figs. 18 and 22. These blowers transfer the products of combustion from the furnace to the producer. In Fig. 18 at *J* is shown an air reversing valve, which also serves for the waste gases, *OO* in the same figure being valves for interrupting the action of the furnace and the producer, these valves being used for the waste gases. The valves are connected to the lever of the valves *DD'*, and, by opening *D* and *D'*, respectively, *O* and *O'*, respectively, are closed. *QQ* are cleaning holes for the grate.

The operation of this furnace is as follows:

Gas from the producer *B* passes through the channel *C*, the valve *D* and the opening *G* to the combustion space *hg*, Figs. 18 and 20. The air to support combustion reaches this space through the regenerator *A*, the channel *K* and opening *H* and burns the gas. The flame passes through *E* and the waste gases escape partly through the other combustion space *hg*, the passages *H* and *K* and goes through the regenerator *A* and the valve *J* to the stack. A portion of the gas is drawn downwards through the opening *G* by the blower *I* and passes through *L* to the producer. The gases are here converted into combustible gases. At certain intervals the direction of the flame in the furnace is reversed by means of the valves *DD'* and the reversing valve *J*. In order to deliver the necessary air for starting the plant, an auxiliary steam jet blower is provided under the grate. Since this furnace was introduced several changes have been made regarding the arrangement and connection of the producer.

Fig. 23 shows an American open-hearth furnace with regenerators built under the end of the furnaces. Fig. 24 shows a similar furnace with regenerators under the charging platform.

(To be continued.)

The annual meeting of the General Electric Co. will be held May 11 in Schenectady, N. Y.

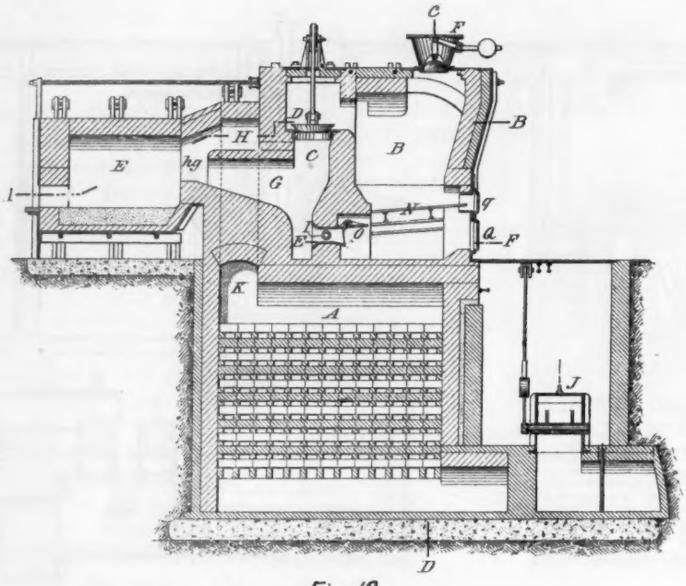


Fig. 18.

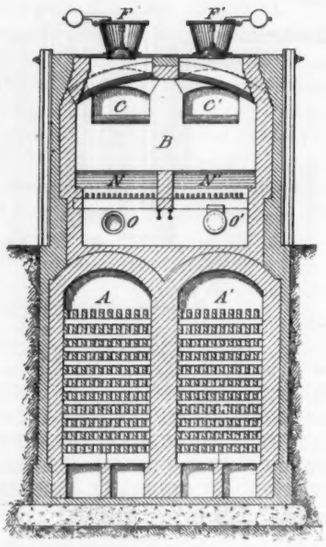


Fig. 19.

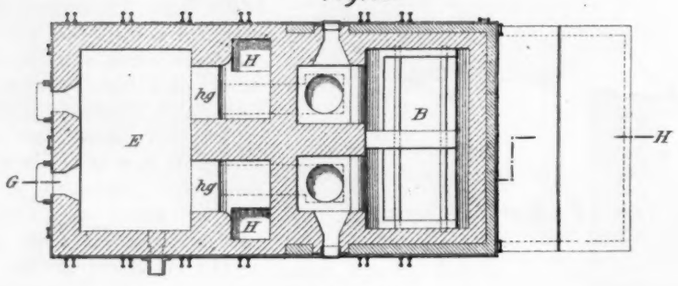
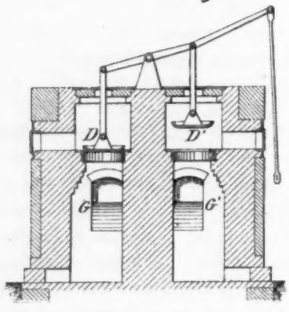
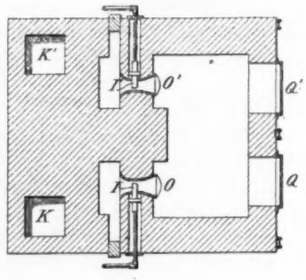


Fig. 20.



Detail of Valves D in Fig. 18.

Fig. 21.



Detail of Valves I in Fig. 18.

Fig. 22.

THE "CHEMICAL" SIEMENS FURNACE.

The Pittsburg Foundrymen's Association has been tendered the opportunity of maintaining a permanent exhibit of molding machines and foundry tools at the Carnegie Technical schools, and has also obtained the assurance of manufacturers that various machines and appliances will be furnished in working order. The committee on a permanent exhibit, consisting of H. P. Spilker, of the Sterritt-Thomas Foundry Co., chairman; E. D. Frohman, of the S. Obermayer Co., and F. H. Zimmers, of the Union Foundry & Machine Co., has issued a letter to members of the association soliciting their opinions as to the advisability of carrying out the plan.

Announcement is made by the Interborough Rapid Transit Co. that it is completing plans for the construction by private capital of additional subway lines in New York City to cost about $50,000,000. If permission to carry out these plans is forthcoming, it is expected that the movements involved will care for the normal growth of the city for 10 or 12 years, during which time there can be worked out a comprehensive scheme to meet the city's transportation problems of 50 or 100 years hence.

At a special meeting of stockholders of Henry Disston & Sons, Inc., Philadelphia, the capital stock of the company was increased from $3,000,000 to $3,250,000, the new stock to be allotted to stockholders pro rata.

A SUBSTITUTE FOR FERRO-SILICON.

The following article reprinted from *The Iron and Coal Trades Review* is a comprehensive discussion of silico-manganese, a new alloy for use in steel making.

Ferro-silicon has attained a place of importance in the steel-making industry that is probably unrivalled by any such alloy, unless it be ferro-manganese. The development of the use of ferro-silicon has been very marked during the last few years, this being due to the perfection of the electric furnace, which permitted the production of an alloy containing a high percentage of silicon and low percentages of carbon and other impurities. Formerly the only means of production was the blast furnace, but this method presents many difficulties, and there cannot be obtained such a high percentage of silicon as by the use of the electric furnace. While ferro-silicon has proved to be of particular value to the steel maker, however, its use is attended by very grave dangers. The high-grade alloy obtainable from the electric furnace, if allowed to come into contact with water or moist atmosphere, gives off large volumes of poisonous and explosive gases, and these undesirable properties of the alloy have been made unmistakably evident by the occurrence of a number of serious accidents. One recent example, which we reported at the time, was the accident on board the s.s. "Ashton," five persons being poisoned by the gaseous emanations of a quantity of ferro-silicon which was being conveyed. This emphatic demonstration of the dangerous nature of the material has caused many shipping companies to refuse to carry it in future; while, on the other hand, suggestions have been offered as to substitutes for ferro-silicon which do not involve the same risks, carbide of silicon being suggested as one alternative material.

Another substitute for ferro-silicon has been found in silico-mnaganese, which does not give off poisonous or explosive gases. This is a compound alloy of silicon, manganese, and iron, containing only traces of carbon, phosphorus, and other impurities. It is a product of the electric furnace, from the direct smelting of a highly silicious manganese ore. Silico-manganese can be used with advantage in all processes of steel manufacture where ferro-silicon and ferro-manganese have been employed. It is a powerful deoxidant and remover of occluded gases and oxides from steel,

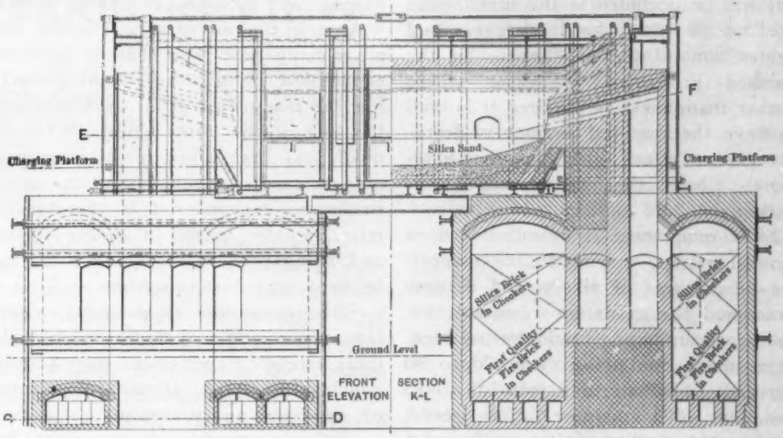


FIG. 23—AMERICAN OPEN-HEARTH FURNACE WITH REGENERATORS UNDER FURNACE.

and is used to introduce either silicon or manganese into steel, or it may be used in cases where both elements are desired to be introduced.

In the open-hearth acid process the alloy may be added to the bath in the furnace shortly before tapping, or it may be added to the metal in the ladle with equally good results. In the former case the metal should be worked to the desired carbon content, and the slag should be adjusted until it is in a well wrought clean condition, and of medium thickness (depending upon the class of material being made). The correct calculated weight of alloy to give the desired amount of silicon and manganese in the finished material, broken in moderately small pieces, should be added to the bath, in frequent small quantities, three or four minutes before opening the tap hole. The bath should be well rubbed up before tapping. In the event of a higher manganese being desired in the finished steel than can be added without raising the silicon to too great an extent, or where the silicon has to be kept below certain specified limits, sufficient ferro-manganese can be added to raise the manganese in the steel to the desired point. The latter may be added either to the bath or the ladle, with equally good results.

In the second case, viz., adding the alloy to the ladle, the remarks about the condition of the carbon and slag apply as in the case of addition to the bath. The crushed and preferably heated alloy should be dropped in frequent small portions on to the stream of metal as it leaves the chute. Under these conditions the silicon and manganese are thoroughly and evenly distributed throughout the whole mass. If the additions are made all at once, or splashed haphazard into the ladle, there is danger that complete mixing will not take place; the slag oxides and some silicate of manganese is formed which may not rise to the top,

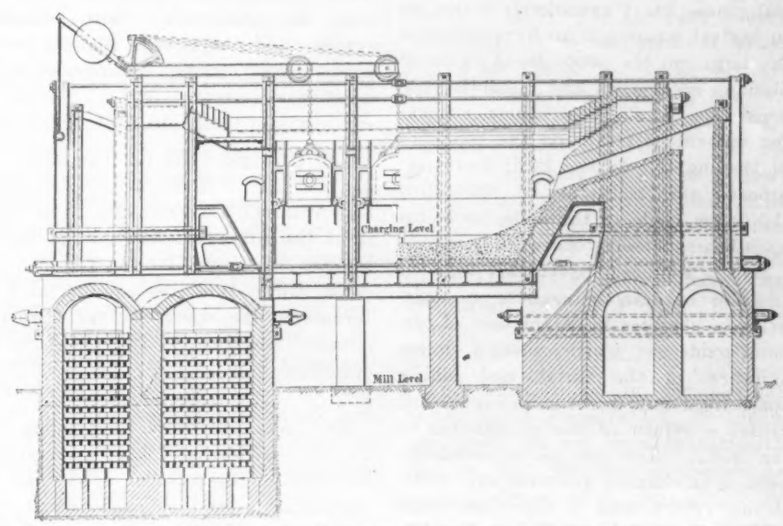


FIG. 24—AMERICAN OPEN-HEARTH FURNACE WITH REGENERATORS UNDER CHARGING PLATFORM.

but will be occluded in the metal, with the result that hard patches and "ghost" markings will appear in the finished products. In cases where higher manganese is required it is well to have the required amount of ferro-manganese mixed with the silico-manganese, both then being added together.

Silico-manganese is manufactured in several grades, varying in the respective percentages of silicon and manganese, and the grade most suitable for the work in hand should be selected. It is made containing from 20 to 40 per cent of silicon, and from 55 to 75 per cent of manganese. The lowest percentage of silicon is the grade most suitable for plates, structural material, and soft steel in general. The highest silicon grade is most suitable for castings.

In the open-hearth basic process, owing to the readiness with which phosphorus goes back from the slag to the metal, the silico-manganese should always be added in the ladle. In this process more of the silicon is oxidized and sent to the slag than in the acid furnace, consequently a greater amount of the alloy may be added without unduly increasing the silicon content of the finished steel, and the whole of the manganese required in the steel up to about 0.7 per cent to 0.8 per cent may be introduced by means of the silico-manganese alone. Silico-manganese is a much more valuable agent in the basic than it is in the acid process, especially where the material is worked down to very low carbon and phosphorus content. Steel of this description is required to carry considerably more heat, and is very frequently inclined to be "wild." It is said that silico-manganese has a remarkable action on such steel, causing it to be quite quiet in large molds and stand without plating, even when the metal is wild when tapped. This, of course, reduces the amount of waste on the top ends of the ingots. In the basic Bessemer process the additions of the alloy should be made to the ladle, as in the open-hearth basic process.

It is a well established fact that the addition of ferro-manganese or spiegeleisen liberates large volumes of carbonic-oxide gas, which causes a violent agitation of the metal, and which, apart from any direct reducing action, causes a return of the phosphorus to the metal. The use of silico-manganese, it is claimed, prevents this undesirable return, and it also does away with the use of ferro-silicon. The advantages of having only one addition to make instead of two will be readily appreciated in basic Bessemer works.

Among the advantages claimed for silico-manganese are that it is very economical in use, the silicon protecting the manganese from oxidation and the loss of the latter being, therefore, much less than when ferro-manganese only is used; further, it contains practically no carbon, and is therefore a most valuable means of adding silicon and manganese to steel which has to be kept very low in carbon.

Silico-manganese is perfectly harmless in use, and may be stored in bulk quite safely. Experiments have proved conclusively that ferro-silicon gives off explosive and poisonous gases, but, according to experiments conducted by Mr. A. Campion, under similar conditions, neither phosphoretted nor arseniuretted hydrogen is liberated from silico-manganese. These experiments were similar to those conducted by the Laboratories of the Royal Institute of Public Health, and they confirmed the claim that silico-manganese is a safe material both as regards transit and storage.

This alloy has been introduced and placed on the market by Messrs. Roberts, Evans & Woodhead, African Chambers, Liverpool, England. The following is an analysis of samples of the alloy taken from six casks and 16 cases:—Manganese, 69.06 per cent; silicon, 25.66 per cent; iron, 4.65 per cent; aluminum, nil; copper, nil; nickel, nil; calcium, nil; carbon, 0.49 per cent; sulphur, 0.029 per cent; phosphorus, 0.054 per cent.

Plant Improved.—The Strong Steel Foundry Co., of Buffalo, N. Y., has recently completed notable improvements at its plant at Main and Amherst streets, including the installation of pneumatic tools, electric cranes and improved foundry machinery for making castings of acid open-hearth steel.

The Carnegie Steel Co. has blown in its new No. 5 stack of its Duquesne blast furnaces, Duquesne, Pa. The stack is of the large modern type and has a capacity of from 500 to 600 tons of metal daily. With the addition of this furnace to the active list, the Carnegie company now has 35 out of 59 stacks in operation.

The Indian Territory Illuminating Oil Co., of Bartlesville, Okla., is receiving estimates on the cost of a gas line to Bartlesville from the Osage Indian reservation, on which that company has the oil and gas lease. The proposed line will probably be 18 miles in length,

LABORATORY METHODS FOR MAKING ALLOYS OF IRON AND VANADIUM.[1]

By W. L. Morrison.[2]

Binary alloys of pure iron and vanadium free from carbon can be conveniently made by two methods: 1. Goldschmidt's method, using pure aluminum and hammer scale from puddled iron, and mixing a little ferro-vanadium with the charge. 2. By use of the electric resistance furnace, using a crucible in the resistor to melt puddled iron and ferro-vanadium.

Goldschmidt's process is very simple and requires but little apparatus. The iron oxide or hammer scale is analyzed and sufficient aluminum is added to combine with the oxygen present. Usually 5 per cent excess aluminum is added on account of oxidation of some aluminum by oxygen in the atmosphere.

The reaction between the oxide and aluminum is brought about by external heat or by ignition of a mixture of barium peroxide and aluminum, which is usually placed at bottom of the charge and electrically ignited. For small charges of two pounds, or less, it is most desirable to apply external heating in order that the reduced iron may separate cleanly from the slag. If internal ignition were used the cold walls of the containing vessel would chill the molten iron before it separates from the slag. A gas furnace or an ordinary forge is convenient for heating the crucible containing the charge. The resulting alloy upon solidifying may then be removed and forged in a bed of quick-lime out of contact with carbon, since the alloys are to be carbon free.

The electric furnace in the second method is of the resistance type. The capacity of the furnace is four one-pound crucibles. The crucibles were magnesia, furnished by the National Carbon Co. of Cleveland. The resistor should be baked carbon of a size between No. 16 and 17 mesh. The terminals are of carbon, 2 by 4 inches. Carbon terminals are used in preference to graphite on account of their low heat conductivity. The walls of the furnace are of common fire brick, the interior of the furnace is lined with "silex," a by-product from carborundum manufacture. The furnace is covered with "silex" slabs to prevent radiation losses. In order that the bottom of the crucibles may heat evenly, the crucibles are placed on small graphite

[1]Abstract of a thesis at the Case School of Applied Science, Cleveland, June, 1908.
[2]1052 East 24th street, Erie, Pa.

blocks. A thin layer of decomposed graphite is used between the resistor and the carbon terminals to give better contact. The construction of the interior of the furnace is for the purpose of giving uniform resistance throughout the bed.

In the experiments conducted by the author the source of current was a 33 kilowatt alternator delivering 1,100 volts. Six transformers of the ordinary line type were connected in parallel and the secondary coils so connected that 110 or 55 volts could be used; 110 volts was used in this furnace during all the runs. The rise in amperage was so slight that the iron melted before the wattmeter registered 20 kilowatts.

The time required to melt one pound of puddled iron in each of the four crucibles was five and one-half hours. The power used was 65 kilowatt-hours. The puddled iron was introduced into the crucibles before the heat and the ferro-vanadium after the melt. Many different crucibles were tried and the magnesia was the only serviceable one.

RECENT CUSTOMS DECISIONS.

The board of U. S. general appraisers decided a protest of E. H. Bailey & Co, Philadelphia, wherein it held that straightened flat steel rods about ½ inch in thickness and 5 feet long were dutiable at 1.2 cents per pound under paragraph 135 of the tariff, as assessed by the collector. The importers claimed the merchandise was wire rods and dutiable at 0.4 cents per pound under paragraph 136.

Protests of the Prime Western Spelter Co., of Kansas City, were decided by the board of United States general appraisers to the effect that zinc ores were free of duty and not dutiable at 20 per cent as "metallic mineral substances in a crude state," but that if the ores contained lead such quantity of lead was dutiable at 1 5/10 cents per pound under paragraph 181.

The United States Circuit Court, southern district of New York, decided the case of Sullivan Machinery Co. against the United States on black diamonds or carbonado. The court held that the merchandise was miners' diamonds or bort and free of duty under paragraph 545 of the free list. The assessment was 10 per cent under paragraph 435.

BOOK REVIEW

A Hand Book on Small Tools. By Erik Oberg. New York. John Wiley & Sons. London. Chapman & Hall, Ltd. ix + 517 pages. 282 illustrations. 5¾ x 8¼ inches. Cloth. Supplied by THE IRON TRADE REVIEW for $3.00.

This book is unquestionably one of the best that has ever been written upon the subject of small tools. The author was for several years connected with one of the foremost tool making concerns in the country and the experience gained by him in that connection forms the basis of this work. The book is divided into 11 chapters, of which seven, comprising 318 pages, are devoted to screw threads and thread cutting tools. The first chapter is a treatise on the various standard systems of threads in common use, including the United States standard, the sharp V, the Whitworth standard, the Briggs pipe, the Acme and the French and International standards. These are discussed in detail, together with other less used threads. The reasons leading to the development and adoption of the various standards are given and formulae and tables are presented, showing the correct dimensions of the various elements of the different threads. Chapter II deals with the methods and principles of thread cutting and the systems of measuring threads. The chapter speaks of the various methods adopted for screw cutting, both with a lathe and in the milling machine, and also by means of rolling or grinding. The rules for change gearing in lathes are presented in a simple manner. The methods of measuring screw threads are thoroughly discussed, sketches of the various instruments used for this work being given. Chapter III discusses simple forms of threading tools, including the single point cutter and chasers, presents methods of making these tools to the correct form, together with methods of testing them for truth. It also defines the various kinds of taps in common use. Chapter IV is a dissertation on hand taps, and not only presents formulae and tables for making them, but goes into considerable detail as to the actual mechanical processes to be followed, and, in addition, takes up the forms of milling cutters and other tools used in their manufacture. Chapter V deals in a similar manner with tapper taps and machine taps, screw machine taps and hobs and die taps, while Chapter VI discusses taper taps in general and miscellaneous taps. Chapter VII is devoted to the subject of threading dies. Chapter VIII deals with plain and side milling cutters, giving formulae, tables and working drawings for their manufacture. It also discusses, in considerable detail, methods of grinding and hardening. Interlocked cutters and gang cutters are also found in this chapter. Chapter IX has for its subject miscellaneous milling cutters and comprises a discussion of end mills, angular milling cutters, form cutters, forming tools, T-slot cutters and inserted blade milling cutters. The chapters on milling cutters also include a discussion on the advantages and disadvantages of high speed steel for this purpose. Chapter X is devoted to the subject of reamers and Chapter XI to miscellaneous small tools, including drills, counterbores, hollow mills and lathe arbors. The form of the book is such as to make it extremely valuable as a work of reference. In addition to the descriptive matter concerning each tool or process listed, formulae for the development of the various tools described as presented and tables of dimensions of the various important working parts of threads and tools are given. Those who have no interest in the deduction or use of formulae will find the results sought for directly in the tables without calculation. The 134 tables, 282 illustrations included in the 506 pages of reading matter form a collection of information on tool making which has never been surpassed.

The Seattle Oxy-Acetylene Co. has been organized in Seattle with a capital of $10,000. The company has exclusive rights in the state of Washington for the use of the Scobey system of autogenous welding and will erect a plant for oxy-acetylene welding and brazing in Seattle. The officers of the company are as follows: E. T. Furness, president and manager; J. E. Forehand, secretary and treasurer; H. G. Allen, superintendent. Temporary offices have been established in the Pioneer building, Seattle.

The negotiations for the purchase of the Steel Foundry Co., of Cincinnati, have not yet been consummated and as the purchaser's option has expired, the receiver will either declare a dividend or obtain another order from the court to again advertise the plant for sale.

MAKING INVENTIONS AND GETTING PATENTS—IV[1]

Inter-Relation of Patents

By John D. Morgan.[2]

Much perplexity, and not infrequently needless litigation and financial loss, arise from a misunderstanding of the inter-relation of patents. This in fact is one of the principal factors in determining the value of a patent.

First let it be understood that after the government has granted to a man the right to make, use and sell his invention he may be prevented from exercising that right and thus his patent becomes, as far as producing wealth for its owner, a dead letter.

This has frequently been a source of perplexity, dismay, and even serious financial loss to inventors. Upon it has been based much criticism of the patent office and of the patent law. Yet, it will be seen upon careful examination that this principle is to the last degree just and equitable.

No Guarantee by Government.

The impression frequently prevails that if a man secures a patent that the government assures him from molestation in the enjoyment of his monopoly. This would be a very happy state of affairs for him provided it were so. To secure absolute assurance of the enjoyment for 17 years of a valuable monopoly for the relatively small sum required to take out a patent would be an ideal condition of affairs so far as the inventor is concerned. Unfortunately for him this is not the case.

Patents are frequently the old case of wheels within wheels and the fact must be reckoned with that the government may have granted a monopoly to a prior inventor through a patent which includes your monopoly, that is, the subject matter of your patent. This can occur in two ways.

1, by the second inventor obtaining a patent for an improvement on the device of the first inventor. 2, by the second inventor obtaining a patent on a second species where the first inventor secured generic claims covering all species.

With respect to the first case, it must be quite obvious upon reflection that if A had a monopoly for the use of a specific device and B makes an improvement thereon and secures patent claims covering of course only such improvement, he is not then entitled to the use of A's invention but only to the use of his own invention, namely, the improvement. To show the foundation for this in common equity, suppose that A and B are rival manufacturers. A invents and patents a machine reducing the cost of production 10 per cent and thus is enabled to outsell B. Would it be reasonable that, in case B makes some slight improvement in A's invention, he should then have the right to use A's machinery and thus share with A the fruits of A's genius, thought and labor? Manifestly not. It is quite obvious that with A's machine before him B would then be obliged to exercise inventive ability of a much lower order and less extent in all probability in order to reap the entire fruits of A's invention. Furthermore anyone who could make any patentable improvement whatsoever in A's machine would then step into a share in A's monopoly without his consent and probably against his will. Also, instead of having the exclusive right as purported by his patent, he would have only a joint right with anyone who chose to improve his machine. Lastly there would be a constant shifting and changing of property titles in the patent, a condition in itself abhorrent to the law.

We might, however, imagine a different case where the first patentee, A, made a device of limited usefulness and B, an inventor in good faith, takes it up and improves it so as to give it a field of wide usefulness. Here the improver is not in the position of one seeking to prey upon a prior inventor, but is rather situated as one who has also made a practical improvement in the art. Even here he must make use of the property, that is the monopoly, of A, and A has the right to shut him out from the use of any device falling within the scope of the claims of A's patent. If he wishes to use his device, he can do so only under a direct arrangement between himself and A.

It is, however, a poor rule which does not work both ways and B can prevent A from using his improvement which gives its enhanced value to A's original device as well as A can prevent B from using the original device without which B's invention is dead. Here again it will be seen that there is a deep rooted justice at the base of the situation, for, the financial fruitage being greatest from the improved form, self-interest would draw each of the inventors toward an agreement whereby they would jointly enjoy the profits arising from the exploitation.

A case in point was the invention of the telegraph where the receiving station was on the sending circuit. This proved impracticable for long distances on account of the heavy battery needed to work the receiving magnet against the resistance of the line. Very soon afterward the local circuit for the recording instrument was invented, thus necessitating only sufficient current in the main line for making and breaking the local circuit. This invention, while entirely subsidiary from a scientific and mechanical standpoint, put the telegraph on a commercial basis. These two inventions would then be in the same relation as A and B in the preceding paragraph. Historically, however, the analogy fails for the reason that Prof. Morse was the inventor in each case, but this practical instance in the history of an important invention will enable the reader to understand that such cases arise frequently in actual experience.

In the second case, in which an inventor would be prevented by a previous patent from using his invention would be where the first inventor, let us call him C, has generic claims. That is, where he invented a machine or apparatus, but the principle upon which his machine operated was new and in consequence he secured claims for *means* employing that principle. D comes along and invents a machine embodying that principle, but D's machine is different in kind from C's, that is, D's machine could be built and operated independently of C's. Here the justice of C's right to prevent D making, using or selling his machine is not so obviously founded on equity, but when we consider that what C really did was not only to invent his particular machine but to show to the world that it was possible to embody mechanically a certain principle, discovered by himself or anyone else, we see that his property, *as defined by his claim*, includes D's machine as well as C's own. He could, therefore, in this case likewise prevent D from making, using or selling his own machine. On the other hand, D could prevent C from making

[1]The preceding articles of this series were published in The Iron Trade Review of March 18 and 25, and April 1.

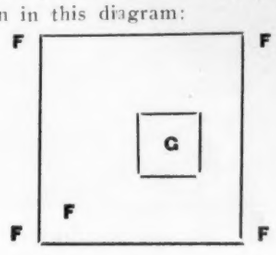
[2]220 Broadway, New York; member of the New York Patent Bar.

D's particular machine. Now should another party, let us call him E, begin making D's machine, either C or D could prevent E for the reason that E's machine falls within the scope of both C's and D's patents, or, in other words, it infringes both patents.

To once more use the telegraph as an illustration, it being probably as well understood and as widely known as any invention, Morse first designed the telegraph as a recording instrument, the dots and dashes being recorded on a traveling strip of paper by a device moved by the current acting on the magnets of the receiving instrument. The record at the receiving station was interpreted through the eye. Later the sounder, familiar to all, for receiving aurally, was devised. It will be clear that the sounder mechanism was quite different in its construction from the recording mechanism. But if Morse in his original patent had a claim for a device at the receiving station movable by the action of the interrupted line current upon the magnets at the receiving station to make signals corresponding to the changes in the line current, it will be seen that, notwithstanding the fact that the modern sounder is very different in its mechanism from the old recorder with its constantly traveling paper strip, its reels, its clockwork and its ink fountain, the claim in the patent would cover both equally. It will be seen that in the old apparatus Morse not only produced a specific device for making the distant record. He did more. He showed that a certain principle of nature could be embodied mechanically and thus made of service to man. His patent monopoly, which was his reward for his service, should, therefore, be commensurate with his service and not include merely his specific device.

Diagrammatic Illustration of Relation of Claims.

A very simple way of illustrating this principle by a diagram would be to consider a grant to F of all the meadowland within a certain square piece of territory and a grant to G made later of all the woodland therein. We would then have the situation shown in this diagram:



The entire square would represent the *principle* of F's invention and the part outside the interior square would represent F's *means for carrying it out* and the interior square would stand for G's *way of carrying it out.* Now applying the ordinary laws of property, it is quite obvious that each man could keep the other off his own property and it would be equally obvious that G could not gain access to the outside world except by traveling over F's property. This access in this case would correspond to the commercial practice of the invention and while his right of property is unquestioned within his square, G would be obliged to treat with F for the right of passage to and fro to the outer world.

A Practical Illustration.

Illustrating these principles by means of some simple claims, let us suppose that in the early days when husbandry was the principal occupation, some man should have invented the hoe. Suppose that he should have secured a patent thereon with a claim something like this:

"A tool having a metal head, a cutting edge and a wooden handle fitting into a socket in the metal head." In a short time thereafter, another man turns his attention to wood-working and invents an axe and secures a claim therefor something like this:

"A tool having a metal head and a socket therein, a wooden handle within the socket, and said metal head having a cutting edge extending in the same direction with the handle."

He may have shown the patent office that turning the cutting edge about gave an instrument or tool having entirely different use and thus secured the granting of his claim. The law directs the patent office, as hereinbefore stated, to grant a patent for every new and useful invention or improvement. Axe has shown that his invention is new and useful as regards the invention of Hoe and so under the law is entitled to his patent. But the question of the extent of Hoe's monopoly, as defined by his claim, is a question of property. Now if Axe is permitted to make, use or sell his tool in derogation of Hoe's monopoly, he is interfering with the property rights of Hoe. Hoe is entitled to a hearing in the courts on the question of the extent of his property.

These illustrations will assist to an understanding that the patent system is not defective nor poorly framed in that it permits patents to issue which are overlaid by broader patents, but that this arises through the very logic of the situation, that it involves property rights and that property rights of necessity are determined by the courts.

A LARGE SHEAR BUILT FOR STEEL WORKS OPERATIONS.

A notable example of the present tendency toward larger machinery in the steel industry is the 192-inch plate shear recently built for the Interstate Steel Co., Brackenridge, Pa., by the

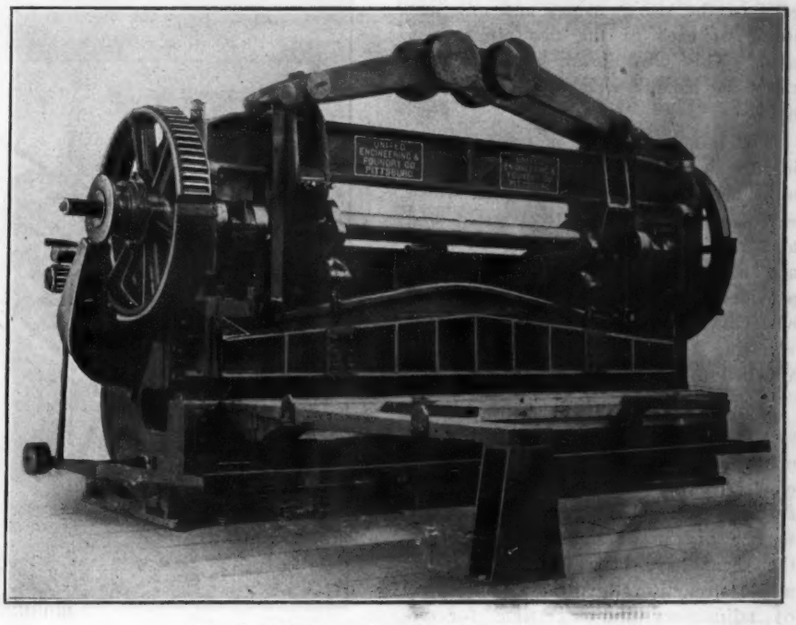


FIG. 1—192-INCH PLATE SHEAR, FRONT.

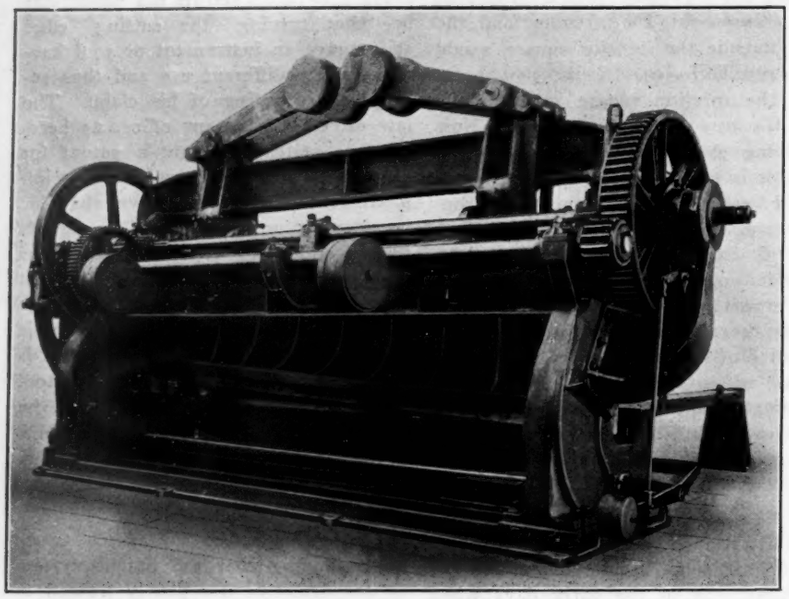


FIG. 2—BACK OF 192-INCH PLATE SHEAR.

United Engineering & Foundry Co, Pittsburg.

The shear is of the usual guillotine type and has a rated capacity of 192 x ⅜ inches steel. This rating is, however, conservative when the shear is compared with the average machine for this work. Owing to the great lengths of knives on this shear, several departures from methods of construction used for shears with shorter knives, were found necessary.

To provide sufficient stiffness in the main eccentric shaft without making it excessively large, a cast steel cross beam with four bearings—one over each of the two housings and one just inside of each of the two pitmans—is used. This cross beam is secured to carry the balance weights for the knife head.

A cam-operating gag is provided, the balance weights for which are carried on a separator, shown in Fig. 2, which extends from housing to housing and also carries bearings for the fly-wheel and intermediate shafts. The shear is provided with a stop motion operated by foot treadle. It can be used for squaring a table with gage arms being attached to the bottom knife block.

All gears are cast steel, the motor and intermediate gears being cut, while main gear and pinion have cast shrouded teeth. The motor for driving the shear is carried on a bracket bolted to one of the housings. All parts of the shear have been designed to give ample strength and stiffness, to be easy of adjustment and accessible for renewal of parts subject to wear.

DEEP HOLE DRILLING AND FINISHING.

Accurate deep hole drilling and reaming as practiced in gun making is a class of work infrequently met with and for which relatively few have occasion or opportunity. A considerable amount of deep drilling is done in the way of machine spindles, hollow shafts, gas engine piston rods, etc., but in such work extreme accuracy is seldom necessary, nor is the amount of it in but few establishments great enough to make special equipment advisable. The Pratt & Whitney Co., Hartford, Conn., builds an extensive line of deep hole drilling, reaming and rifling machines designed and used chiefly for armory and gun factory work, though adaptable to sundry other lines, as indicated above. The accompanying illustrations and description of some of those machines and equipment are, therefore, of interest.

The drilling machines are built in six sizes for holes up to 9 inches diameter. The three smaller sizes are regularly built with double heads and carriages and therefore operate simultaneously on two pieces of work. In all machines the work revolves while the drill is stationary for reasons obvious to every mechanic. The work is carried at one end and revolved by a chuck; the other end, which is previously trued up to a size, runs in a hardened and ground bushing, which also centers and starts the drill. The leading feature is really the form of drill employed, which is of a special one-lip type with serrated cutting edge. It produces a chip, or chips easily removable through the helical groove, and this together with the absence of the non-cutting center web common to all double-lip drills, removes any tendency of the drill to deflect from a straight line. The periphery of the drill is ground and an oil duct is provided through which the lubricant is forced under high pressure and this keeps the cutting edge cool and in excellent con-

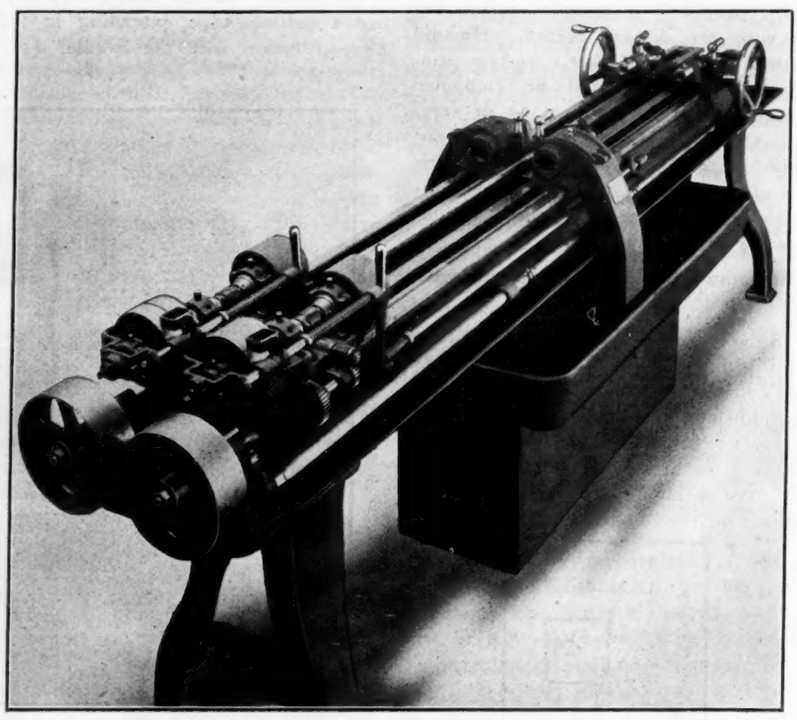


FIG. 1—GENERAL VIEW OF NO. 1 GUN BARREL DRILLING MACHINE.

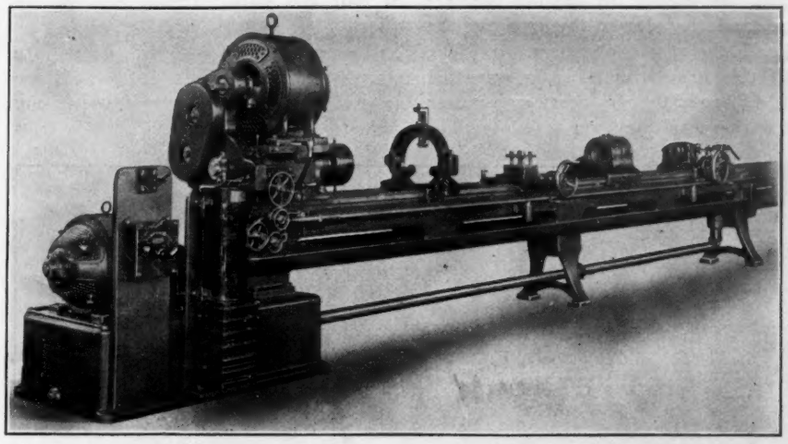


FIG. 2—NO. 2 GUN BARREL DRILLING MACHINE, MOTOR-DRIVEN.

dition for a long period, besides assisting in forcing the chips out through the chip channel.

The work is run at high speed, while the feed is somewhat finer than in ordinary drilling. The drills are made of a special steel and are made very hard by a special process, so that the fine feed has no tendency to glaze the cutting edge. The clearance of the cutting edge, the eccentricity of the high point, the number of serrations on cutting edge and the correct speed and feed are of the utmost importance and have to be given careful consideration for each class of work.

Fig. 1 illustrates the No. 1 size machine for holes up to 13-16 inch diameter, belt-driven; Fig. 2 is the No. 2 machine, single head, motor-driven, for holes up to 3 inches diameter; Figs. 3 and 4 show the form and construction of drills for different diameters and classes of work and the wide difference in the form of cutting edges is plainly evident.

In a special catalog on deep hole drilling and rifling machines, the Pratt & Whitney Co. also illustrate and describe others of these machines, as well as reaming, lapping and rifling machines.

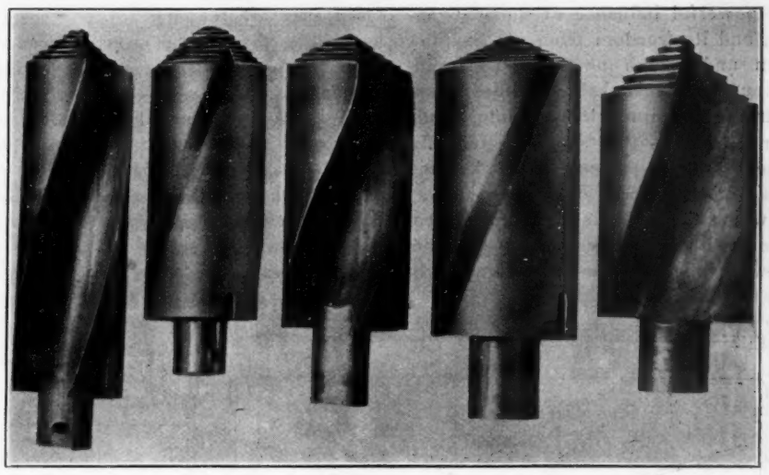


FIG. 3—TYPICAL DRILL TIPS, SHOWING SERRATED POINTS.

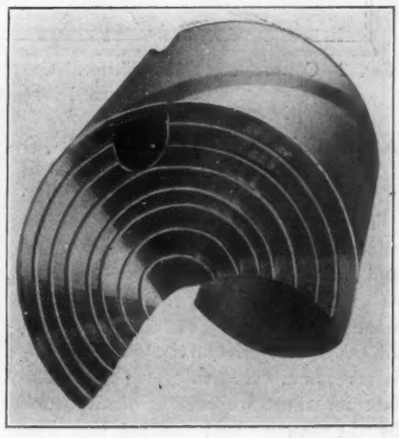


FIG. 4—END VIEW OF LARGE DRILL TIP.

THE INFLUENCE OF GASES ON THE STRUCTURE OF CAST IRON.

At a recent meeting of the Staffordshire Iron and Steel Institute, a paper was read by J. E. Fletcher on the "Influence of Gases on the Structure of Cast Iron and Steel." The author is a practical metallurgist in complete control of a large plant comprising coal mines, blast furnaces, forges and mills in the famous old iron making district of Dudley.

FIG. 1—MOTTLED IRON CAST IN A CHILL

In his remarks on cast iron he said: "Every observant foundryman knows that gases play an important part in the structure of cast iron, and that unless sufficiently large feeding heads and risers are placed near the heaviest sections of a casting, blow holes, cavities, and pipes are inevitable. The office of the feeding head is to allow the gases to escape from the molten interior of a casting, and to give liquid iron a chance to replace the space recently occupied by the gases. When a portion of a casting is chilled, the gases liberated when the iron (ferrite) crystals are formed, are driven at great speed through the eutectic or mother liquor surrounding such crystals and should the silicon be low and the manganese high, the crystals of cementite will arrange themselves at right angles to the chilled surface. This crystal arrangement, which is to be observed in every chilled casting, seems to follow the paths of gas escape. The fracture of a mottled iron ingot, cast in a chill, shows clearly the gas paths, and the position of the pipe, Fig. 1. A similarly cast ingot of white iron, Fig. 2, when fractured reveals the gas paths and zones of weakness, and some imprisoned gas bubbles, or blow holes. The microphotograph, Fig. 3, which is that of a

white iron, goes to prove that the crystalline structure of a cast ingot is determined by the direction of the gas paths.

"An intelligent consideration of the gas paths, when dealing with the casting of any pattern, however complicated, will show where heads, risers, and runners should be placed for the best results. As in the case of steel, silicon and manganese play an important part in connection with the escape of gases during solidification. An iron with 3.5 per cent carbon and 96.5 per cent iron, when fractured, is white, whether cast in a chill or in sand. Under the microscope small gas cavities appear in the entectic portion, which was last to solidify.

"If this iron is remelted, and 2.5 to 3 per cent silicon added, the resulting fracture is gray. Gas cavities are absent, and in the center of the casting, that last to solidify, graphite is found in coarse flakes. This graphite is swept into its place by the escaping gases, and, as might be expected, the higher the casting temperature, and the slower the cooling, the higher is the graphitic content.

"If this gray iron is again remelted and 4.5 to 5.0 per cent manganese added the resulting iron is white. Under the microscope, it shows plainly the powerful influence of the manganese, and its freedom from gas cavities, even under high powers of magnification, is unmistakable. Silicon appears to promote slow cooling, while manganese has the opposite effect. In other words, silicon, by keeping liquid the eutectic or mother liquor, in which the crystals are growing, enables the gases to escape freely from between the fir tree like branches of the crystals."

FIG. 2—WHITE IRON CAST IN A CHILL

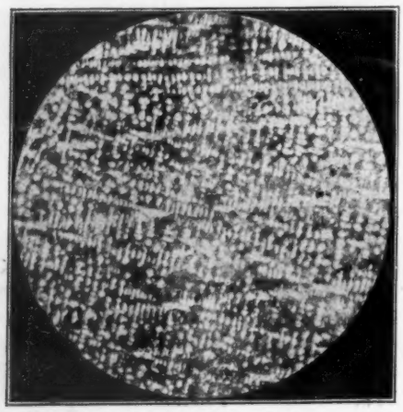


FIG. 3—MICRO-STRUCTURE OF WHITE IRON

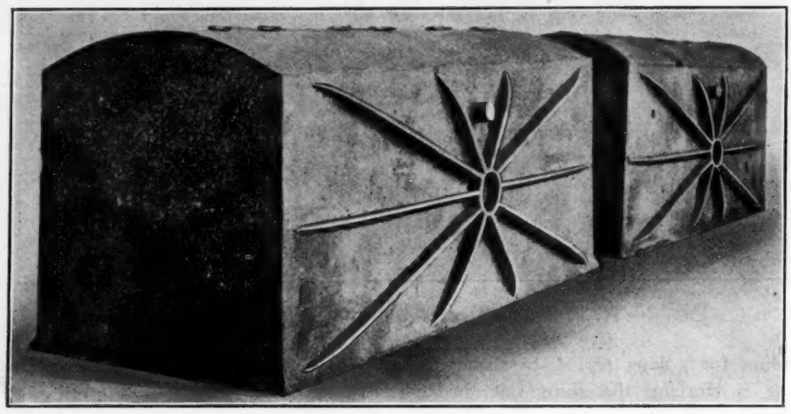


FIG. 1—CAST STEEL ANNEALING BOX WITH "UNION" TRUSS-SUPPORTED ROOF AND RADIAL TRUSSED RIBS.

ed roof and radial trussed ribs on the sides.

The radial trussed ribs which are placed on each side of the box are arranged to distribute any strain arising when the box is in service. The ribs are cored out at intervals so that after firing they are the first to cool, thereby holding the sides in a rigid position while the box is cooling and preventing warping.

The truss, running down about an inch below the spring of the roof arch, ties the sides firmly together, and by acting with the radial ribs keeps the box in perfect outline while it is being subjected to the forces of expansion and contraction. The roof truss strengthens the spring of the arch and prevents sagging. A bottom bead is put upon the box to avoid the possibility of any cracking.

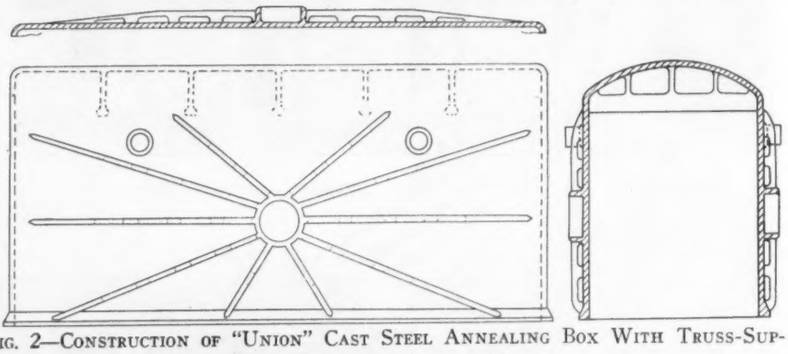


FIG. 2—CONSTRUCTION OF "UNION" CAST STEEL ANNEALING BOX WITH TRUSS-SUPPORTED ROOF AND RADIAL RIBS.

ANNEALING BOX WITH TRUSS-SUPPORTED ROOF AND RADIAL RIBS.

To overcome a common problem in annealing box service, that of bulging and warping of the sides and sagging of the roof after continuous firing, some ingenious designs have been worked out by manufacturers. One of these is the improved cast steel annealing box for sheet work being manufactured by the Union Steel Casting Co., Pittsburg. Among the special features of this box are the "Union" truss-support-

The box, ribs and truss supports are cast together in an integral piece. The mold is carefully built up and fed so that a solid casting and hermetical seal to air and flame is assured. Liberal feed heads or risers are provided on the casting to insure a solid box. One of the company's boxes after making 230 heats was still in use, and quite a number have been successfully fired 200 times or more under ordinary mill

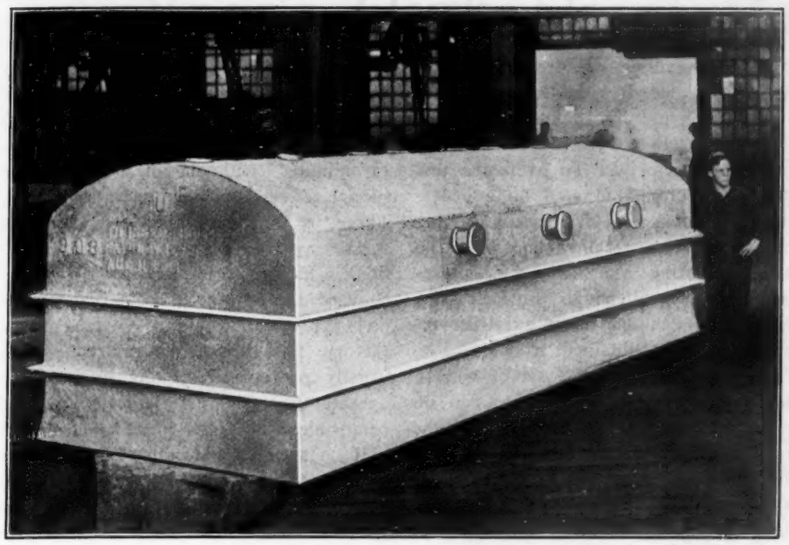


FIG. 3—LARGEST ANNEALING BOX EVER MADE, 190-INCH x 62-INCH INSIDE, 54-INCH HIGH OVER ALL.

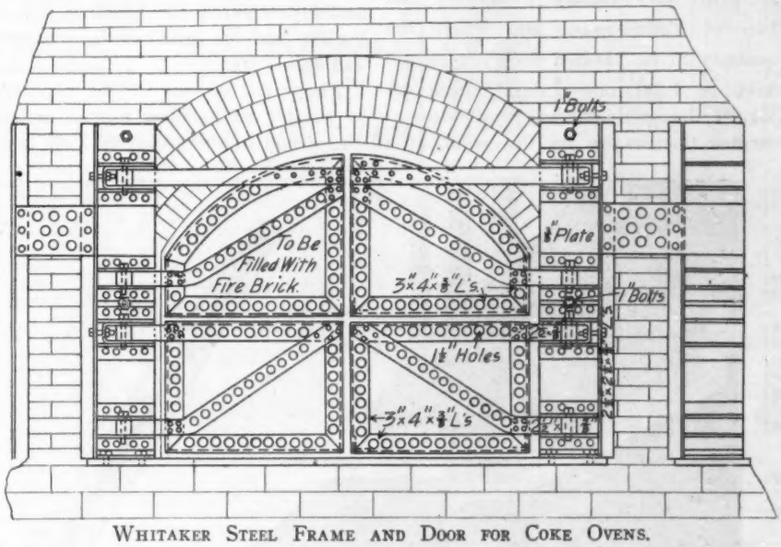
conditions. The rigidity of the box affords a full piling height throughout its entire term of service. The boxes manufactured are frequently 132 inches by 42 inches inside by 65 inches high over all, although any specified size is cast. The largest box ever made by the company, as shown in one of the accompanying illustrations, was 190 inches long by 62 inches wide inside by 54 inches high over all, the old style of lateral ribbing being used. The steel of which the box is cast is of low phosphorus open hearth stock.

The plant of the Elmira Rolling Mills Co., Elmira, N. Y., was sold recently at sheriff's sale for $20,000 to M. H. Arnot. The sale, it was said, was for the purpose of clearing up the title and that the business will be conducted as heretofore.

STEEL-FRAME DOORS DESIGNED FOR COKE OVENS.

The exacting conditions of coke ovens in blast have presented problems due to lack of durability in materials and in construction parts, involving also the factor of increased labor costs, and these questions are calling for constant attention from managers and operators.

With the purpose of correcting one of these sources of continuous expense, a steel-frame coke oven door has been designed by John Whitaker, manager of the Connellsville Iron Works, New Haven, Pa., and this is now in use in a number of the modernly equipped plants of the Connellsville region. The door is of simple construction. It consists of a frame of steel angles, divided into four parts, or practically four separate doors on the same framework which swing open at the center. Each of the four divisions of the door swings on its own hinge, the four hinges, two



WHITAKER STEEL FRAME AND DOOR FOR COKE OVENS.

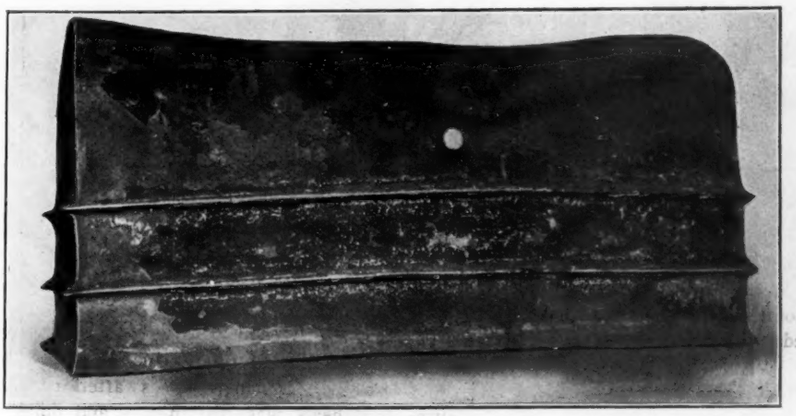


FIG. 4—"UNION" TRUSS-SUPPORTED ROOF CAST STEEL ANNEALING BOX, 128 INCHES x 49 INCHES x 64¼ INCHES HIGH OVER ALL. FIRED 230 TIMES. STILL IN USE.

to a side, being attached to the oven wall behind the jambs. The steel frames when attached are filled with brick. After the oven has been charged the doors require little additional work, it being necessary to daub only the chinks instead of the entire front of the brick work, as is now the case with the brick door which must be built into bee-hive ovens after each charge.

It is claimed for Mr. Whitaker's invention that it saves labor on the yards in the renewing of the ordinary brick doors after each run, and that as it can be rammed out, the full heat of the oven is preserved for some time. It affords a complete seal of the oven. The cost of installation is light.

A number of the doors have been

undergoing tests for the past year at various plants in the Connellsville region, including the Continental No. 1 plant of the H. C. Frick Coke Co., Herbert works of the Connellsville Central Coke Co. and at the Tower Hill No. 1 plant of the Tower Hill-Connellsville Coke Co., and satisfactory results have been obtained. They are to be installed in the new Royal plant of the W. J. Rainey interests, at the projected 1,000-oven coke plant of the Jones & Laughlin Steel Co. at Aliquippa, Pa., and in other fields. The door is being manufactured by the Connellsville Iron Works and is built to specifications to suit the size and style of the ovens.

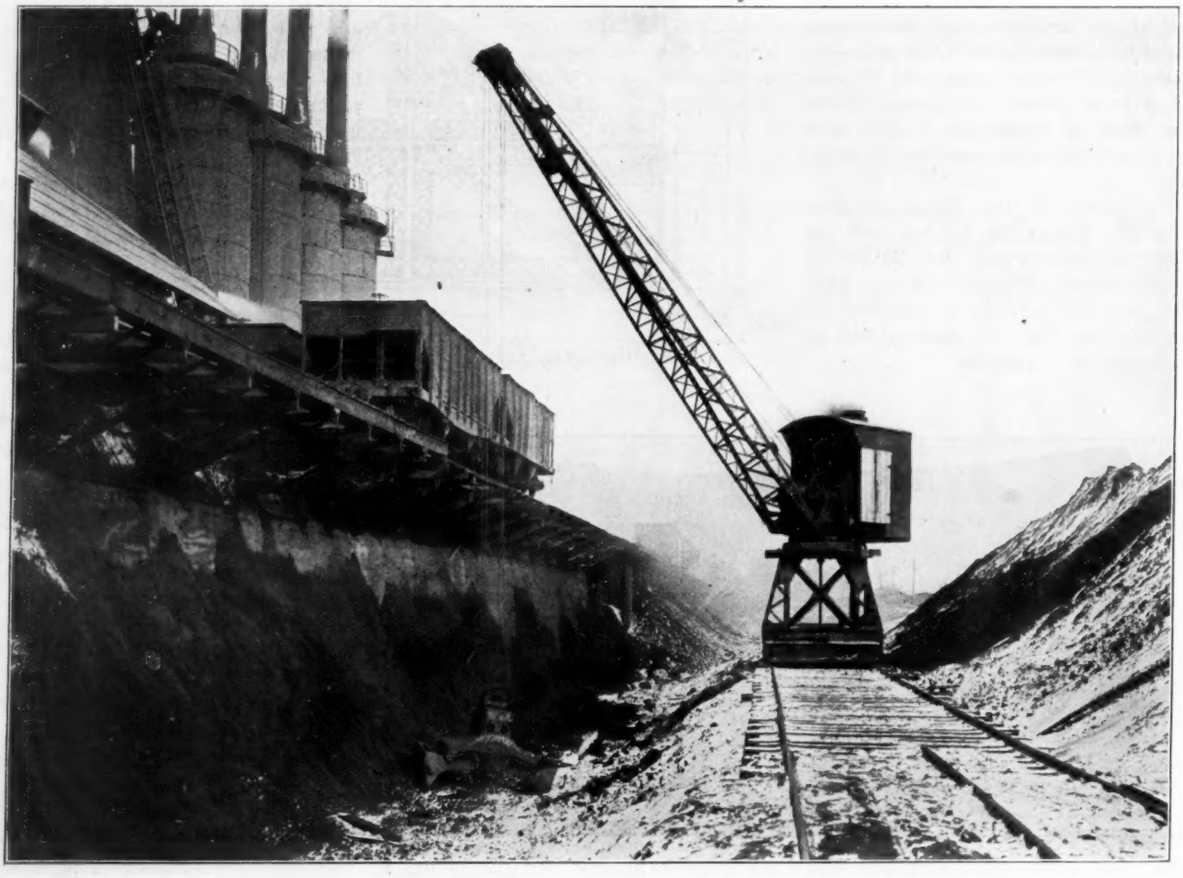
A SPECIAL LOCOMOTIVE CRANE FOR HANDLING IRON ORE AT FURNACE PLANTS.

The use of locomotive cranes for handling iron ore in furnace yards has increased very rapidly within the last two or three years, and where the quantity to be handled does not exceed 1,000 or 1,200 tons a day, a well designed locomotive crane has demonstrated that it can do this work at a low cost that compares favorably with any other machine now on the market. One objection to this type of crane, for handling ore from the stock pile into elevated bins, has been its height, which usually is not sufficient to allow the boom to reach over the top of bin satisfactorily. To overcome this objection a crane mounted on a pedestal, as shown in the accompanying photograph, was recently built by The Brown Hoisting Machinery Co., Cleveland for the Shenango Furnace Co., Sharpsville, Pa., and most excellent results have been obtained from it.

The crane has a double set of wheels, the inner set being designed to run on standard railroad tracks, enabling the crane to be moved to any portion of the yard and used for other purposes than handling ore, if desired. The outer set of wheels are enough smaller in diameter than the inner ones, to allow the crane to pass over frogs, crossings, etc., readily. When handling ore the crane runs on this wider gage track which provides for the additional stability required for handling the grab bucket and its load at the maximum radius.

The crane shown in the photograph is capable of handling a load including the weight of the bucket of 7,200 pounds at a maximum radius of 47 feet. The bucket is the standard 24 cubic feet 2-rope Brown type, built with a view of withstanding the most severe usage and having weight enough to insure good digging qualities. Cars of 50 gross tons capacity have been loaded in 15 minutes without any unusual or special effort on the operator's part. Three to four cars an hour would be a fair average under favorable conditions. Either steam or electricity can be used for power on these cranes; but owing to the trouble of placing satisfactory feed wires, steam cranes are usually preferred for this work. One operator is all that is required for performing all the operations and it will be seen by the illustration that he is in a position to command a good view of the bucket while picking up its load and also when dumping it into bins.

In order to provide against the possibility of crane being overturned, either from a defective wheel, poor track or any similar cause, safety stops are provided which come to a bearing on the four lines of rails before the crane can drop far enough to do any damage. As a matter of fact the stability of this crane is greater than that of the standard lower type.



"BROWNHOIST" LOCOMOTIVE CRANE ON PEDESTAL FOR HANDLING IRON ORE AT PLANT OF SHENANGO FURNACE CO.

Year's High Point Record Made

Decided strength together with renewed activity in the earlier part of the week was followed by a reactionary tone and realizing sales. The market was largely professional. Bonds were generally strong.

The market opened Monday strong, and the advance which had begun the latter part of the week previous continued; trading was the heaviest in a month. Tuesday the market continued strong, 20 stocks scoring high prices for the year; wheat sold at the highest price since 1898, $1.28½ a bushel. Further vigor was shown Wednesday, and stocks offered steady resistance to discouraging news; London was a buyer of stocks on a liberal scale. Irregularity characterized Thursday's market, price movements showing a mixed tendency; the high level at which prices started brought out realizing sales which resulted in a lower close, Steel common closing at 50⅞. Friday the market opened weaker, and after a short interval of quietude, the market receded on comparatively light transactions; a reduction in the price of copper both in New York and London was noted. Prices yielded a trifle at the start Saturday, but gradually recovered, and at the close prices went well above Friday's final.

Call money was easy throughout the week, ranging between 1½ and 2 per cent, and time money was easy at the close of the week, light demand combined with plentiful supply bringing about the decline. An increase of nearly $16,000,000 in loans was noted in the bank statement, and the total surplus was $14,569,550, compared with $51,560,875 a year ago, and $27,038,650 two years ago. The actual statement of clearing house banks showed loans increased $9,655,400; deposits increased $328,500; reserve decreased $5,238,500, and the percentage of reserve 25.81, a decrease of 0.45. Non-member banks and trust companies showed loans increased $5,061,500; net deposits increased $5,686,700.

New York authorities are looking forward with confidence to the spring settlement which will be adjusted April 10, regarding the situation in every way stronger than at the same time last year. Immigrants to the number of 31,781 landed at New York city last week, a gain of 3,497 over the preceding week. Commercial failures for the week were 218, compared with 269 the preceding week, and 267 the corresponding week last year. The total failures for March showed an increase in the number of failures over February, but decline in total liabilities to the smallest of any month since the panic. It was noted that in the stock market March was the least active month of any since last summer. Gold exports abroad ended abruptly, but $500,000 in gold has been engaged for shipment to Brazil. The week's bank statement showed clearings of the United States were 27 per cent larger than the preceding week and 30 per cent larger than the same week last year. Shares were sold to the number of 5,260,639 compared with 3,155,860 the preceding week and 2,926,400 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $32,804,000, compared with $18,403,000 the preceding week and $10,080,000 the corresponding week last year.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Apr. 3	Changes in Week	Date 1909 Ann. M't'g.	Stock Outstanding	Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	15	+ ⅝	Sept. 2	$19,820,000		.....	.....
Allis-Chalmers pr	46¾	+1⅞		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	8⅝	+ ½	Feb. 2	41,233,300		.....	.....
Am. Can pr	74¼	— ⅜		41,233,300	7 cum	1¾ Q.	Jan., 1909
Am. Car & Foundry	50½	+1	June 24	30,000,000		½ Q.	Jan., 1909
Am. Car & Fdy pr	111	+1		30,000,000	7 n. c.	1¾ Q.	Jan., 1909
American Loc	55⅞	+1⅝	Oct. 19	25,000,000	5	1¼ Q.	Aug., 1908
American Loc. pr	114⅞	+ ⅞		25,000,000	7 cum	1¾ Q.	Jan., 1909
American Ship	58⅞	.....	Oct. 13	7,600,000	4	1 Q.	June, 1908
American Ship pr	106	+1		7,900,000	7 n. c.	1¾ Q.	Oct., 1908
Am. Steel Foundries(new)	37½	— ¾	Dec. 2	17,184,000		.....	.....
Am. Steel Foundries, pr	47½	.....		17,240,000	6 cum	1	Aug., 1904
Barney & Smith	40	.....	June 1	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith, pr	95	.....		2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	24	+2	April 6	14,862,000		.....	.....
Bethlehem Steel, pr	52	+3		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	36	+1½	March 16	45,000,000*	6	1½ S. A.	Feb., 1909
Cambria Iron	46¾	+ ½		8,468,000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool	23	+2½	Feb. 15	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	36	+2	Oct. 18	34,235,500		3½	April, 1902
Crucible Steel	7⅛	+ ⅛	Oct. 20	24,578,400		.....	.....
Crucible Steel, pr	60	+2		24,436,500	7 cum	1 Q.	Mar., 1909
Empire Steel	6	.....	April 27	1,254,770		.....	.....
Empire Steel, pr	46	.....		2,500,000	6 cum	1½ S. A.	Jan., 1909
Fay & Egan	90	.....	Feb. 18	1,000,000	6	1¾ Q.	Nov., 1908
Fay & Egan, pr	125	.....		1,000,000	7 cum	1¾ Q.	Nov., 1908
General Electric	157	—1	May 11	65,178,800	8	2 Q.	Jan., 1909
Harbison-Walker	17	.....	Jan. 18	18,000,000		½	Oct., 1907
Harbison-Walker, pr	80	.....		9,600,000	6 cum	1½ Q.	Jan., 1909
International Pump	37⅛	— ⅛	June 8	17,762,500		1.	April, 1905
International Pump, pr	84⅞	+ ½		11,350,000	6 cum	1½ Q.	Feb., 1909
Lackawanna Steel	32	+2	March 10	34,971,400		.....	.....
Lake Sup. Corp	18¼	— ½	Oct. 6	40,000,000		.....	.....
New York Air Brake	87½	+3	June 17	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	100	.....	Feb. 3	8,500,000	6	1½ Q.	Mar., 1909
Niles-Bement-Pond, pr	100	.....		2,000,000	6 cum	1½ Q.	Feb., 1909
Otis Elevator Co	47	—2	March 15	6,375,300		1½ S. A.	April, 1909
Otis Elevator Co., pr	94	.....		6,295,000	6 n. c.	1½ Q.	April, 1909
Penn. Steel	50	.....	May 10	10,750,000		.....	.....
Penn. Steel, pr	104	+1		16,500,000	7 n. c.	3½ S. A.	Nov., 1908
Pittsburg Coal Co	10¼	.....	March 9	28,104,600		.....	Nov., 1906
Pittsburg Coal Co., pr	41	—2		27,071,800	7 c.	1¾	April, 1905
Pressed Steel Car	38½	+1½	Feb. 17	12,500,000		3	Aug., 1904
Pressed Steel Car, pr	99¼	+1¼		12,500,000	7 n. c.	1¾ Q.	Feb., 1909
Pullman	174½	+2½	Nov. 10	100,000,000	8	2 Q.	Feb., 1909
Railway Stl. Spring	39	+2⅛	March 4	13,500,000	4	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	100	+1		13,500,000	7 cum	1¾ Q.	Dec., 1908
Rep. Iron & Steel	22	+1	Oct. 20	27,191,000		.....	.....
Rep. Iron & Steel, pr	73⅝	+1¾		20,416,900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	73½	+1½	March 10	10,000,000	5	1¼ Q.	Mar., 1909
Sloss-Sheffield, pr	108	.....		6,700,000	7 n. c.	1¾ Q.	April, 1909
U. S. Pipe & Fdy	28¾	— ¼	June 23	12,500,000	4	¾ Q.	Dec., 1907
U. S. Pipe & Fdy., pr	72⅝	+ ⅝		12,500,000	7 n. c.	1¾ Q.	Sept., 1908
U. S. Steel	50⅜	+4¼	April 19	508,302,500	2 n. c.	½ Q.	Mar., 1909
U. S. Steel, pr	113⅝	+2		360,281,100	7 cum	1¾ Q.	Mar., 1909
U. S. Steel 5s	103⅜	+ ⅜		463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	60	+3	Sept. 21	9,073,680		.....	.....
Westinghouse Elec	81¾	.....	June 16	27,173,200	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	108	.....	Oct. 5	14,000,000*		2½ Q.	April, 1909

Par value of shares, $100, except those starred (*), $50.

Copper Stocks.

New York.—Amalgamated Copper closed 75, a net gain of ¾.

Boston.—Butte Coalition closed 24½, a net increase of ½; Calumet & Arizona closed 100, a net loss of 1; Calumet & Hecla closed 620, no change; North Butte Mining closed 71, a net gain of 1¼; Quincy Mining closed 88, no change.

Financial Notes.

The Nova Scotia Steel & Coal Co., Ltd., declared the regular quarterly dividend of 2 per cent on preferred stock, payable April 15; the American Rolling Mill Co. declared the regular quarterly dividend of 1½ per cent on preferred, payable April 1.

NEWS FROM MANY INDUSTRIES

New Buyers:—

Z. J. Walser, J. M. Cook and others have incorporated with $20,000 capital stock, as J. M. Cook & Co., machinery, Lexington, N. C.

The Tandem Gas Engine Co., Houston, Tex., gas engines, has been incorporated with $50,000 capital stock, by C. S. Woods, R. P. Christian and J. F. Minton.

The Boyd Iron Works, Richmond, Va., machinery, etc., has been granted a charter with $25,000 capital stock. W. C. Boyd is president, and D. L. Boyd secretary and treasurer.

Zachariah Leach, George A. Leach, George Leach and others have been incorporated as Leach & Sons Co., Ltd., with an authorized capital of $40,000, to carry on business as iron founders and machinists at Kemptville, Ont.

The Quick Release Wrench Co., Beaver Falls, Pa., has been granted a certificate of incorporation with $50,000 capital stock. The incorporators are Treasurer James M. Conkle, Mary Conkle and H. A. Mitchell, all of Beaver Falls, Pa.

A charter has been granted to the Milled Screw & Machine Co., Sayre, Pa., $50,000 capital stock. The directors are: C. C. West, Sayre, Pa.; James Bowen, Philadelphia; C. C. West, L. E. Kinsman, W. T. Goodnow, C. E. Loetzer, all of Sayre, Pa.

The Penn Shear & Mfg. Co., Reading, Pa., has been granted a certificate of incorporation with $10,000 capital stock. The directors are: Delaney P. Harris, New York City, treasurer; Wilson M. Silhart and Miller M. Deem, both of Reading, Pa.

Articles of incorporation have been filed by the Mentzer Machine Co., Springfield, Vt., for the purpose of manufacturng and selling machinery, with a capital of $2,000. Charles S. Mentzer, Frank W. Stiles and Fred C. Davis, all of Springfield, are the incorporators.

A charter has been granted to the Arcadia Manganese Co., St. Louis, Mo., capitalized at $50,000, to manufacture and deal in chemical and electric appliances for treating ores. Those interested are Charles A. Niel, Frank Shassere, Frank L. Buchanan, William F. Gradolph and Mason K. Blake.

Articles of incorporation have been filed by the Traction Engineering Co., New York City, to manufacture mechanical and electrical apparatus, railroad equipment and dynamos, with a capital of $5,000. The incorporators are C. C. Mann, 243 Rutland road, Brooklyn; Lewis S. Rough, 520 West 175th street, New York City, and Francis N. Dede, 34½ South Twelfth street, New York City.

The Hughson Steam Specialty Co., 100 Washington street, Chicago, has been chartered to manufacture machinery, with a capital of $50,000. The incorporators are George H. Hughson, Roy M. McCarthy and Joseph Wright.

The Universal Expanded Metal Co., 919 Monadnock Block, Chicago, has been chartered by Austin J. Rooney, John J. Rooney and Loyal L. Smith for the purpose of manufacturing metal goods. The capital stock is $5,000.

The Goodall Mfg. Co., Augusta, Me., iron pipe, castings and couplings, has been granted a certificate of incorporation. The capital stock is $100,000, and the incorporators are: G. K. Bassett, president and treasurer, and N. L. Bassett, clerk, both of Augusta.

The Structural Steel Underframe Co., New York City, has filed articles of incorporation to operate a machine and blacksmith shop, etc., with a capital of $50,000. The incorporators are: Irving E. Burdick, Robert H. Strahan, W. H. Adams, 28 Broad street, New York City.

A charter has been granted to the Ideal Automatic Mfg. Co., New York City, to manufacture pumps, engines and governors, with $200,000 capital stock. Those interested are: Charles P. McMullen, 125 Watts street, Victor E. Downer and Edward B. Shoule, Pier 59, North River, all of New York City.

The Metropolitan Smokeless Furnace Co., New York City, to manufacture furnaces, engines and boilers, has been incorporated with $25,000 capital stock. Those interested are: Michael F. Burns, 270 Henry street, Brooklyn; Solomon M. Schatzkin, Rutherford, N. J.; Frank L. Burns, 270 Henry street, Brooklyn, N. Y.

The Novelty Iron Works, New York City, has been granted a charter to manufacture engines, boilers and machinery with a capital of $20,000. Those interested are: George W. Boyd, 464 A McDonough street, Brooklyn, N. Y.; William A. Ritchie, Hoboken, N. J., and William Boyd, 329 Central avenue, Jersey City, N. J.

The Johns-Streeter Co., New York City, has filed application for a charter to manufacture Streeter shoe brakes and railway equipment, with a capital stock of $100,000. Those interested include: John N. Johns, 325 West Ninety-third street, and Alfred L. Streeter, Astor House, both of New York City, and Howard M. Burr, East Orange, N. J.

New Construction:—

The Bettendorf Axle Co., Davenport, Ia., recently let the contract for the steel work for its proposed new foundry to George W. Jackson, Inc., of Chicago.

The Chicago Hardware & Foundry Co. has awarded the general contract for a foundry at North Chicago, Ill., one story, 100 x 220 feet, brick, estimated to cost $50,000.

The Pennsylvania Foundry Co., York, Pa., has been granted a permit to erect a frame foundry with a frontage of 28 feet at the junction of Carlisle avenue and the Pennsylvania railroad.

The Elmira Heater & Foundry Co., Elmira, N. Y., has acquired three acres adjoining its plant, upon which it contemplates, some time in the future, the erection of additions to aid in caring for the company's increased business.

The construction of the new implement plant of the William Fetzer Co., Springfield, Ill., has been completed, and the company advises that both its foundry and shops have been placed in operation under favorable circumstances.

Ground has been broken for an extension to the steel foundry of the Pennsylvania Steel Co., at Steelton, Pa. The extension will be 50 feet, and three bays will be erected. The structural material is being fabricated in the company's own shops.

The Decatur Furnace Co., Decatur, Ind., has decided to erect an addition to its plant, 80 x 100 feet, of brick and steel construction and gravel roof. No addition will be made to the equipment except as to flasks and minor fittings.

The Standard Foundry & Mfg. Co., Cleveland, light gray iron castings and hardware specialties, advises that no decision has yet been reached as to just what it will rebuild of the buildings destroyed in its recent fire.

The Gardner Axle Works, Carlisle, Pa., whose shops were badly damaged by fire recently, is being re-constructed rapidly. The machine shop will be 50 x 200 feet, of brick and steel. The frame work for the other portions of the plant have been erected.

The 26 boilers in course of erection by the Rust Boiler Co. at the

Ensley, Ala., plant of the Tennessee Coal, Iron & Railroad Co., are about completed, and the force of workmen is leaving Ensley. Fire was placed under five of the new boilers recently.

Work is progressing on the new buildings for the Pitts Foundry & Construction Co., South Houston, Tex. The main building will be one story, 80 x 125 feet, and there will be several smaller buildings. It is hoped to start the plant within a few weeks.

Because of the receipt of a number of contracts, the Enid Foundry & Machine Co., Enid, Okla., is hurrying the construction of its new building. In the new foundry will be handled the heavy work, while small castings will be made in the old plant directly across the street.

The plant of the National Machine Co., Columbus, Ind., has been leased by Charles Caldwell and Charles Rhorer for a period of five years. They will establish shops for the manufacture of rotary engines and a patented window sash. It is planned that shortly a foundry will be added to the present plant.

The Oklahoma Iron Works, Tulsa, Okla., has announced that it will erect a plant on a tract of land northeast of the city, including 15 acres. A foundry 80 x 160 feet and a structural steel shop 100 x 200 feet will be constructed. The plant of the company at East First street, at present occupied, which was recently enlarged, will also be used.

The American Locomotive Co., has announced a decision to build a boiler shop at the Brooks plant at Dunkirk, N. Y. It will be built near the iron foundry, 175 x 650 feet, of iron, stone and brick, and is estimated to cost $300,000. It is planned to make it an improvement over the new boiler shop of the Schenectady plant, and it will be equipped with the most modern machinery.

Love Bros., Inc., Aurora, Ill., heavy gray iron castings and special machinery, architectural and structural iron and steel, advises that the new building, of which previous mention has been made, is to be 60 x 250 feet, and will be used for a fitting shop in the ornamental department. As to equipment, there will be nothing added except possibly one or two ton hoists, as the whole shop is equipped with a trolley system.

The Cadillac Motor Car Co., Detroit, Mich., advises concerning the damage sustained at the Leland & Faulconer Mfg. Co.'s plant which is now a part of the organization of the Cadillac company, that the fire damaged to some extent the brass foundry and destroyed a few patterns, but both buildings and patterns have been replaced. The company was not handicapped materially, as can be seen when it drew off a heat 48 hours after the fire.

The new Burrell-Johnson Iron Co., Ltd., Yarmouth, N. S., engineer, founder, boilermaker and stove builder, advises that it will at once rebuild its machine and stove fitting shops which were both destroyed in the recent fire. The new building will be approximately 60 x 160 feet. The list of tools to be installed includes a 72-inch x 72-inch x 30-foot planer, an 8-foot boring and turning mill; 48-inch, 24-inch, 21-inch, 18-inch, 16-inch, 14-inch and 10-inch engine lathes, as well as several smaller ones; 20-inch shaper; 24-inch by 6-foot 4-inch planer; 8 or 10-inch slotter; universal milling machine and 6-foot universal radial drill; four or five smaller drills; pipe machine; bolt cutter; key seater; tool grinder and several other tools required to make an up to date and complete machine shop equipment. A 10-ton traveling crane will also be installed.

General Industrial:—

The Eagle Tool Co., Cincinnati, has changed its name to the Eagle Mfg. Co.

The Ground Hog Plow & Foundry Co., Clarksville, Tenn., has changed its corporate name to the Drane Foundry & Supply Co.

The capital stock of the Des Moines Bridge & Iron Co., Des Moines, Ia., has been increased from $350,000 to $425,000.

Notice of an increase of capital from $50,000 to $100,000 has been filed by the Berry Foundry & Mfg. Co., St. Joseph, Mo.

The Southern Pipe & Foundry Co., North Birmingham, Ala., has filed notice of its increase of capital from $35,000 to $75,000.

The Detroit Steel Products Co., Detroit, Mich., has filed notice of an increase of its capital stock from $300,000 to $500,000.

Permission has been given by the court to pay a partial dividend of 30 per cent on approved creditors' claims against the National Steel & Wire Co., New Haven, Conn.

Edward J. Cochran, of the Sterling Foundry Co., Sterling, Ill., has purchased an interest in the Sterling Pattern Works, and at the same time the Sterling Pattern Works purchased the plant of the Harrison Mfg. Co., of Sterling, and will take possession of the latter company's plant. The pattern company is planning to build a brick addition to the present structure.

An application for the appointment of a receiver for the Tschudi-McBarron Machine Co., Dayton, O., was recently made by Charles T. Tschudi. The company is engaged in the manufacture of drill presses.

The address of the Idaho National Harvester Co., which through inadvertence was omitted from the item relative to this concern printed on page 536 of the March 18 issue of THE IRON TRADE REVIEW, is Moscow, Idaho. The location of the plant is a few miles north of Moscow.

The plant of the Western Iron & Foundry Co., Wichita, Kans., has been sold by H. J. Roetze, receiver, for $49,000 to two members of the original firm, J. F. Warren and Henry Anthony. While the sale is yet to be confirmed by the court, it is announced that the plant will reopen for business at once.

The Hydro-Vacuum Machine Co., 220 Fourth street East, Cincinnati, whose incorporation with a capital stock of $25,000 was recently noted, advises that it was organized to manufacture a portable house cleaning machine. It is not erecting any buildings at this time; it is simply renting manufacturing space.

The J. D. Smith Foundry Supply Co., corner of Scranton and Carter roads, N. W., Cleveland, advises that the recently noted increase of its capital stock is due to the desire to care for the steadily increasing business and not to the possible erection of additional buildings at this time.

Announcement has been made by the Moore & Scott Iron Works, San Francisco, that it has purchased the Boole & Son's ship yard at Oakland, Cal., the new owners to take possession April 1. It is planned to expend $150,000 in enlarging the Boole yards, another dock to be built with a capacity of 5,000 tons.

The Indianapolis Belting & Supply Co., 16-18 South Capitol avenue, Indianapolis, advises that its recently noted increase of capital stock is to care for its growing business. The company has been extending its activities, and the increased capital was necessary to provide for continuing the extension.

A new company to be known as the Seamless Steel & Mfg. Co., to succeed the Seamless Steel Bath Tub Co., has been organized at Detroit with a proposed capitalization of

$600,000 by Eugene H. Sloman, inventor of the tub. D. M. Ireland will be president of the new company, and E. L. Wayman will be general manager. The plant on Mount Elliott avenue near Harper avenue cost $500,000, and was in operation about a year. It suspended a year ago at the death of Theodore D. Buhl, who was financially interested in the company.

The Stone-Watts Mfg. Co., with plants at Springfield and Republic, Mo., which was incorporated by R. C. Stone, Len Watts and Fred L. Watts with a capital stock of $10,000, proposes to build a larger plant at Springfield. It will continue to deal in mill supplies as well as contracting for the erection of mills, elevators and mill machinery.

The Pacific Mfg. & Supply Co., Spokane, Wash., has been reorganized under the name of American Brass Works. J. A. Wade is president and manager. The company will use the shops formerly owned by the Pacific Mfg. & Supply Co., and will make a specialty of high grade brass castings. Some improvements and new equipment for the old plant are being planned.

The Seneca Chain Co., Kent, O., machine and hand-made welded chains, has just completed an order for the Panama canal commission of 125,000 pounds of 1¼-inch chain. It also made a shipment of 200,000 pounds to the lighthouse department last week, on its contract of 1,300,000 pounds. It has installed an electric welder for the purpose of welding up to 7/16 inch. Business is improving steadily, and customers are buying in larger quantities. Prices are firm, and no cutting is being done.

The Robins New Conveyor Co. has leased the entire building at No. 72 Front street, New York City, and April 1, removed its offices from No. 38 Wall street to this new location. The machinery and other effects of the Duane street factory are now being removed into the new quarters as rapidly as possible. The constant and material increase in the company's business is responsible for the change of location and the combining of offices and factory. Greatly increased facilities are provided by the new location particularly for the manufacture of Robins laminated leather belting and Robins genuine balata belting.

The Lucas Machine Co., Jamestown, N. Y., whose incorporation was recently noted, advises that it was organized to manufacture a sander recently invented by its president, Louis Lucas. Instead of manufacturing the machine in a plant of its own, the company has arranged with a foundry and machine concern to build the machines for it. It is claimed for the new machine that it is built on entirely different principles and approaches nearer to hand-sanding than any other machine. The officers of the company are: President, Louis Lucas; vice president, E. A. Curtis; Secretary, Frank G. Curtis; treasurer, O. R. Pang.

The Stetson Ross Machine Works, Seattle, Wash., advises that although the company was only recently incorporated, it was organized early in 1908. Its shop is equipped with most modern tools. It is the purpose of the company to manufacture a line of machines for saw and planing mill work. The company further advises that its business has already grown beyond the capacity of its present equipment, and at present it is in need of heavy planers, lathes and milling machines. G. W. Stetson, president of the company, is an old time Pacific Coast lumber man, and H. B. Ross, vice president, was for 15 years connected with the Berlin Machine Works of Beloit, Wis., as vice-president and designer.

The Franklin Machinery Co., Franklin, Pa., whose incorporation was noted recently with a capital of $50,000, advises that it was organized to succeed to the business of J. P. Coffman. He will remain with the new company as general manager. The company owns about three acres of land in the city of Franklin, on which it has a fireproof concrete and steel building, 64 x 64 two stories, with sufficient machinery and equipment to justify employing about 50 men. The building is new, having been occupied only since Feb. 1. It will continue to manufacture the special work in which Mr. Coffman had engaged, as well as manufacturing a complete line of boring, drilling and milling machines.

Trade Notes:—

The sales offices of the Sligo Iron & Steel Co., which were formerly maintained in Pittsburg, were removed April 1 to the general offices at Connellsville, Pa.

George K. Hooper, an engineer and designer of industrial plants with a specialty of foundries, has removed his offices from 11 Broadway to the City Investing building, 165 Broadway, New York.

The Hyatt Roller Bearing Co. has removed its central sales offices in Detroit to 801-803 Trussed Concrete building, at the corner of Lafayette boulevard and Wayne street. Its offices formerly had been at 1013 Majestic building, Detroit. In the new building the company will have more commodious quarters for its central sales office.

Fires:—

The building at Dallas, Tex., part of which was occupied by the Dallas Gin & Foundry Co., and part by the Dallas Sash Weight Co., was badly damaged on March 25. The foundry company was damaged to the extent of about $2,500, with insurance of $1,750, and the sash weight company fixed its loss to patterns and equipment at about $2,000, partly covered by insurance.

The Wright Wire Co. suffered a fire March 21, at its plant at Palmer, Mass., following a destructive fire at its Worcester, Mass., plant March 20. At the Palmer plant, the wire rope department was damaged to the extent of about $25,000.

TRADE PUBLICATIONS.

TIE PLATES—The Sellers Mfg. Co., Chicago, is distributing an attractive booklet descriptive of the Sellers anchor bottom tie plate for use on railroads. This tie plate is corrugated, enabling it to firmly grip the track. The booklet is printed in two colors and well illustrated.

BLAST FURNACES—The William B. Pollock Co., Youngstown, O., is distributing supplement No. 13 to its general book on views of blast furnaces which it has built. The present supplement presents 11 views of the new furnaces for the Ohio works of the Carnegie Steel Co.

OIL ENGINES—The Remington Oil Engine Co., Stamford, Conn., is distributing a 23-page booklet describing the Remington oil engine for marine and stationary purposes. The engine is of the valveless type and delivers a power impulse in each cylinder for each revolution of the flywheel. It is built in sizes ranging from 6 to 60 horsepower.

VALVES—A comprehensive catalog of 220 6 x 9-inch pages has been issued by the Nelson Valve Co., Philadelphia. The catalog is handsomely printed in two colors, bound in cloth and divided into three sections, devoted, respectively, to bronze valves, iron body and steel valves, and accessories and fittings. Practically every type of valve is presented in the pages of the catalog, including gate, globe, angle and check valves. Valves for superheated steam and special purposes, pipe fittings, including tees, elbows, flanges, etc., are also listed.

CEMENT MIXERS—The Svenson mixer, manufactured by the Svenson-Shuman Machine Co., Pittsburg, is described in a 31-page catalog 8 x 5¼ inches. This mixer is a steam-driven machine, which proportions the materials to form concrete. The construction and operation of the machine is described and illustrated and some notes are presented upon the proper proportions of concrete.

ELECTRIC HARDENING FURNACES—Bulletin No. 4655, just issued by the General Electric Co., Schenectady, N. Y., gives a more or less detailed description of an electric furnace manufactured by this company, and states the advantages derived by the use of such a furnace in connection with tempering and annealing.

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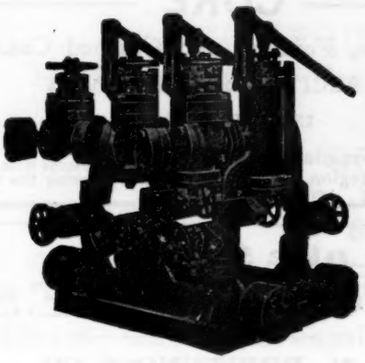

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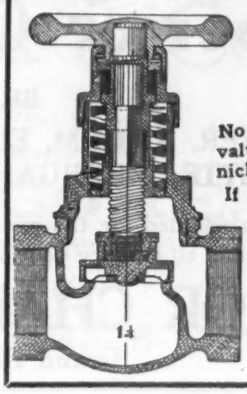

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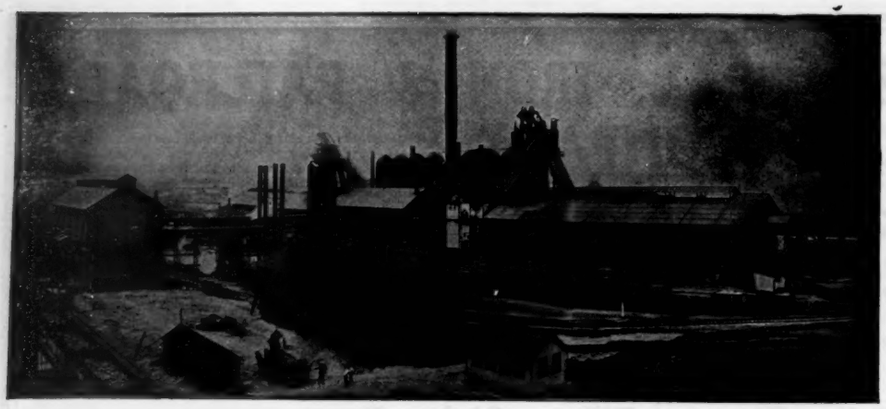

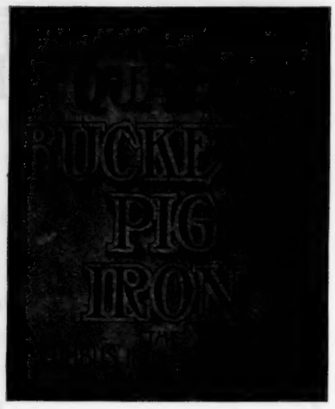

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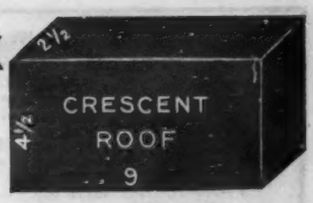

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THE

Manufacture and Properties of Iron and Steel

THOROUGHLY REVISED BY THE AUTHOR

HARRY HUSE CAMPBELL

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